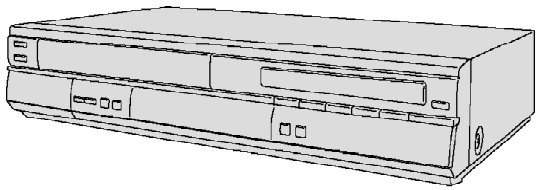
ORDER NO. MAV0309001C3

DVD Player/ Video Cassette Recorder

Panasonic VHS
PAL NTSC

NV-VP31GL / NV-VP31GC / NV-VP31GCS

R4-MECHANISM



SPECIFICATIONS

SPECIFICATIONS

ITEM	SPECIFICATION	
POWER	SOURCE: 220-240V AC 50/60 Hz (NV-VP31GL) 110-240V AC 50/60 Hz (NV-VP31GC/GCS)	
	CONSUMPTION: 23 watts	
RECORDING SYSTEM	2 rotary heads, helical scanning system	
	PAL/NTSC	
PLAYABLE DISCTYPE (8cm or 12cm)	DVD-Video, AUDIO CD (CD-DA), VIDEO CD, CD-R/RW (CD-DA, Video-CD Formatted discs), DVD-RAM/DVD-R (DVD-VR/ Video compatible), MP3/WMA, JPEG, High MAT	
DVD SIGNAL SYSTEM	PAL 625/50, NTSC 525/60	
PICK UP	Wave length: 658nm/780nm Laser Power: CLASS 2/CLASS 1	
TV TUNER SYSTEM	NV-VP31GL	VHF: CH0-CH12 UHF: CH28-CH69 CATV: CHS1-CHS41
	NV-VP31GC/GCS	VHF: CHE2-CHE12 UHF: CHE21-CHE69 CATV: CHS1-CHS41
RF OUT SYSTEM	NV-VP31GL	PLL (CH28-CH69/OFF) 75 Ω closed
	NV-VP31GC/GCS	PLL (CHE21-CHE69/OFF) 75 Ω closed
VIDEO	HEADS: 4 rotary heads 1 pair for recording and playback (I-R heads) 1 pair for trick play (L'-R' heads)	
	INPUT: VIDEO IN (AV1: REAR) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated VIDEO IN (AV2: FRONT) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated	
	OUTPUT: VHS/DVD VIDEO OUT Connector (Phono type) 1.0 Vp-p, 75 Ω terminated DVD VIDEO OUT Connector (Phono type) 1.0 Vp-p, 75 Ω terminated DVD S-VIDEO OUT (S4P) Y; 1.0 Vp-p, 75 Ω terminated C; 0.3 Vp-p (PAL), 75 Ω terminated C; 0.286 Vp-p (NTSC), 75 Ω terminated DVD COMPONENT VIDEO OUT Connector (Phono type) Y; 1.0 Vp-p, 75 Ω terminated PB/CB; 0.7 Vp-p, 75 Ω terminated PR/CR; 0.7 Vp-p, 75 Ω terminated	

ITEM	SPECIFICATION
AUDIO	HEAD: 1 Stationary head (Normal-mono only) 2 channels (Hi-Fi Sound-Stereo)
	INPUT: AUDIO IN (AV1: REAR) Connector (Phono type) -6dBV (500 mV), More than 47 kΩ AUDIO IN (AV2: FRONT) Connector (Phono type) -6dBV (500 mV), More than 47 kΩ
	OUTPUT: VHS/DVD, AUDIO OUT Connector (Phono type) -6 dBV (500mV), Less than 1kΩ DVD AUDIO OUT Connector (Phono type) 2Vrms, (1kHz, 0dB, 10kΩ) DVD Optical digital output
AUDIO CHARACTERI-STICS	S/N ratio: Normal More than SP; 43 dB HiFi 65 dB DVD 115 dB FREQUENCY RESPONSE: Normal 80 Hz-8 kHz Hi-Fi 20 Hz-20 kHz DVD (linear audio) 4 Hz-22 kHz (48 kHz sampling) 4 Hz-44 kHz (96 kHz sampling) CD audio 4 Hz-20 kHz
DYNAMIC RANGE	VCR: More than 90 dB DVD (linear audio): More than 99 dB CD audio: More than 97 dB
TAPE SPEED	SP: 23.39 mm/s (PAL), 33.3 mm/s (NTSC) LP: 11.695 mm/s (PAL) EP: 7.796 mm/s (PAL), 11.1 mm/s (NTSC) Record/Playback Time: (PAL) SP:4 hours with 240 min. type tape LP:8 hours with 240 min. type tape EP:12 hours with 240min type tape FF/REW Time: 60sec. with 180 min. type tape JET REW Time: 43 sec. with 180 min. type tape
REGION NUMBER	Region No. 2 and No. 3
OPERATING TEMPERATURE	5°C - 40°C
OPERATING HUMIDITY	35% - 80%
DIMENSIONS	430 (W)×89(H)×266(D) mm
WEIGHT	4.0 kg
STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. AC Mains Lead (NV-VP31GL/GCS) 2 pc. AC Mains Lead (NV-VP31GC) 1 pc. Infra-red Remote Controller 1 pc. AV cable

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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Panasonic

1. INTRODUCTION

1.1. INTRODUCTION

This service manual contains technical information which will allow service personnel to understand and service this model.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:

1. **Adjustment procedures, Disassembly Procedures and Assembly Procedures for Mechanism Chassis are separate volume from this service manual.**
   Please refer to the service manual for R4-Mechanism Chassis. (Order No. VRD0202010C8)
2. **The Model No. is indicated on the Schematic Diagram and Circuit Board Diagrams as follows.**

Model No.	Indication Mark
NV-VP31GL	(GL)
NV-VP31GC	(GC)
NV-VP31GCS	(GCS)

1.2. ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:
PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:

- **Pb free solder has a higher melting point than standard solder, Typically the melting point is 50-70°F (30-40°C) higher. Please use a high temperature soldering iron. In case of soldering iron with temperature control,please set it to 700±20°F (370±10°C)**
- **Pb free solder will tend to splash when heated too high (about 1100°F/600°C).**

When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

2. SAFETY PRECAUTIONS

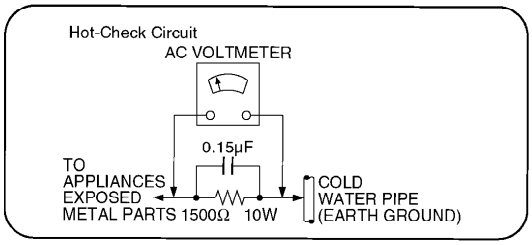
2.1. GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, confirm that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, do the following leakage current checks to prevent the customer from being exposed to shock hazards.

2.1.1. LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to thechassis, the reading should be between 1M Ω and 5.2M Ω .
   When the exposed metal does not have a return path to the chassis, the reading must be ∞.

Figure 1



2.1.2. LEAKAGE CURRENT HOT CHECK (See Figure 1 .)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5k Ω , 10 watts resistor, in parallel with a 0.15 μ F capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1 .
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.

4. **Check each exposed metallic part, and measure the voltage at each point.**
5. **Reverse the AC plug in the AC outlet and repeat each of the above measurements.**
6. **The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to do the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outsideof the limits specified, there is a possibility of a shock hazard, therefore the equipment should be repaired and rechecked before it is returned to the customer.**

3. PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistorsand semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. **Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available dischargingESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.**
2. **After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as alminum foil, to prevent electrostatic charge buildup or exposure of the assembly.**
3. **Use only a grounded-tip soldering iron to solder or unsolder ES devices.**
4. **Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.**

5. **Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.**
6. **Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, alminum foil or comparableconductive material).**
7. **Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.**

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. **Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD)sufficient to damage an ES device).**

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

4. PRECAUTION OF LASER DIODE

5. PREVENTION OF STATIC ELECTRICITY DISCHARGE

The laser diode in the traverse unit (optical pickup) may break down due to static electricity of clothes or human body. Use due caution to electrostatic break down when servicing and handling the laser diode.

5.1. Grounding for electrostatic breakdown prevention

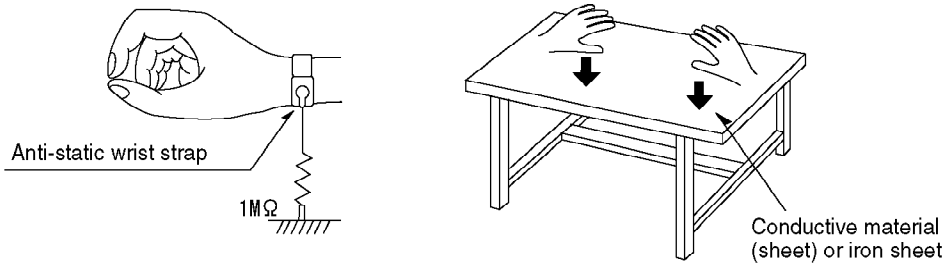
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

5.1.1. Worktable grounding

1. **Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.**

5.1.2. Human body grounding

1. **Use the anti-static wrist strap to discharge the static electricity form your body.**



5.1.3. Handling of optical pickup

1. **In order to keep the optical pickup in good quality, during transporting and before installing, both ends of the laser diode are to be shortcircuited. After replacing the part with a new one, remove the short circuit according to the correctprocedure. (Refer to this Service manual)**
2. **Failure to do so will damage the laser diode due to the external current surge from the power supply in the tester.**

5.2. Handling Precautions for Traverse Unit (Optical Pickup)

1. **Do not give a considerable shock to the traverse unit (optical pickup) as it has an extremely high-precise structure.**
2. **When replacing the optical pickup, install the flexible cable and cut its short land with a nipper. Refer to the optical pickup replacement procedure in this Service Manual. Before replacing the traverse unit, remove the short pin for preventingstatic electricity and install a new unit. Connect the connector as soon as possible.**
3. **The flexible cable may be cut off if an excessive force is applied to**

it. Use caution when handling the cable.

4. The half-fixed resistor for laser power adjustment shall not be adjusted. Do not turn the resistor.

6. GENERAL DESCRIPTION

6.1. OPERATING INSTRUCTIONS

6.2. SERVICE CAUTION-1

When the Microprocessor IC6001 and/or Back-up battery B7751 are replaced, read the following procedure carefully and proceed it.

[REASONS]
There is a RAM in the IC6001, which is backing up:

1. **Programme Navigation Data [See NOTE1]**
2. **TV Tuning Data**
3. **PG Shifter Adjustment Data**
4. **Option Setting Data**

When IC6001 are replaced, all above listed data become not available.
These data is backed up by using the power source of:
***AC Connected: AC Power source**
***AC Disconnected: Back-up Battery (B7751) & Back-up Capacitor (C7752)**

[NOTE1]
As for your reference, without inserting a tape into a VCR, you can confirm that the NAVI data that is backed up by IC6001 as shown in the following steps.

1. **Press the Menu button and select the option, then set the "NAVI" to ON mode.**
2. **Turn on the Service Mode and press the "NAVI" button on the Remote Controller in more than 5 seconds. The "NAVI" data list is displayed on the Monitor. (Press the "MENU" button on the Remote Controller for cancellation.)**

Although stored NAVI data can be confirmed on the monitor, there is no way to transfer the NAVI data to IC6001 which is newly mounted.

6.2.1. REPLACING PROCEDURE [IC6001]

[1.PREPARATION]
Before replacing IC6001:

1. **Be noted that stored TV broadcast channels might be erased. (Because the user may have stored TV broadcast manually rather than using "Auto Tuning".)**

NOTE:
During servicing, do not make a short circuit between IC6001-pin 37 (5V) with other line/ Components otherwise IC6001 may be broken.

CAUTION:

***When replacing the B7751, be sure to read/follow the "HOW TO REPLACE THE LITHIUM BATTERY" section.**

[2.REPLACING PROCEDURE IN STEPS]

STEP1.PREPARATION

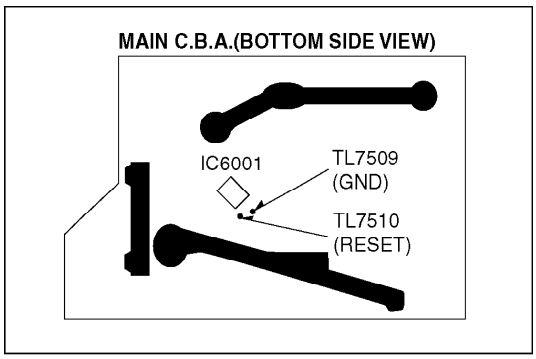
1. **Disconnect the AC plug before removing the C.B.A. with Mechanism unit by referring to the Disassembly procedure.**

STEP2.REPLACE THE IC6001

1. **Replace the IC6001. (Do not make a short circuit between IC6001-pin37 and other pins/Components.)**

STEP3.RESET THE IC6001 AT ONCE

1. **Connect the AC plug.**
2. **Connect a jumper wire between TL7510 (RESET) and TL7509 (GND) for a second to reset the Microprocessor IC6001.**



Note:

Since the resistance at pin 2 of IC6001 decides the model distinction, there is no need to set up the Model code, which is necessary in the previous models.

STEP4.LINE-IN SETTING & ACTIVATE PLUG-IN A.T.P.
(FOR OTHER THAN NV-VP31GL)

1. **Press the Channel up and down keys simultaneously for more than 3 seconds until the channel on the unit's display changes to 1, under the condition of the no tape is in the unit.**
2. **Confirm that "A1" and "A2" can be displayed on the FIP by pressing the CH UP and CH DOWN buttons.**
3. **Disconnect the AC plug for few seconds and connect it again, and press POWER button for turning the power to on from off to carry out the "Plug in Auto Tuner Preset".**
4. **Since other than the channels that can be stored by "Auto Tuning" operation are not available yet, preset manually by consulting the note of its available TV channels of which you took before.**

STEP5.TAPE INTERCHANGEABILITY ADJUSTMENT
Refer to the Electrical Adjustment Procedures.

6.3. CAUTION FOR AC MAINS LEAD (NV-VP31GC)

6.4. HOW TO REPLACE THE LITHIUM BATTERY

6.4.1. GENERAL DESCRIPTION

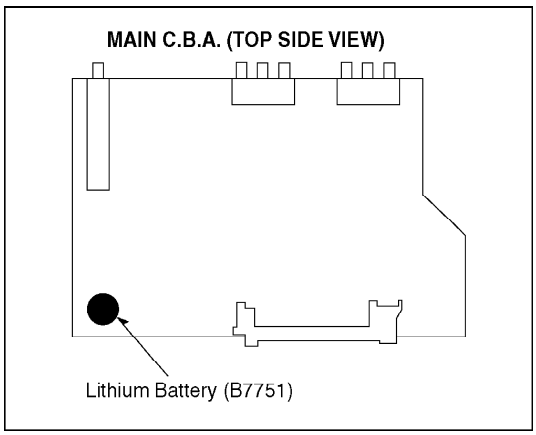
There is a RAM in the IC6001, which is backing up the following data by using the power source of B7751 (Back-up Battery) and C7752 (Back-up Capacitor: Back-up time is approximately 30 minutes).

1. **Programme Navigation Data**
2. **TV Tuning Data**
3. **PG Shifter Adjustment Data**
4. **Option Setting Data**

6.4.2. REPLACEMENT PROCEDURE

NOTE:
This work should be finished within 30 minutes so that the RAM data would not be lost as running out of current from the Back-up Capacitor C7752.

1. **Remove the Top Panel and Mechanism unit with Main C.B.A by referring to the Disassembling Procedure.**
2. **Unsolder the Lithium Battery: B7751 and then replace it with a new one (See Fig. B1).**



NOTE:
The lithium battery is a critical component.
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

PRECAUTION
Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT
Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.
Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning má kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

6.5. SERVICE CAUTION-2

6.5.1. CAUTION FOR AUTO TUNING

PROCEDURE
Auto Tuning will start by the following procedure.

1. Connect the DIN-RF Cable.

2. Connect the AC Mains Lead.

3. Turn on the VCR.
Auto Tuning will start.
Auto Tuning search for TV stations from VHS minimum to UHF maximum and memorizes every tuned program position. Other program positions are skipped.
Auto Tuning takes five or more minutes to complete its search. Do not touch the VCR during Auto Tuning.
Auto Tuning will stop halfway, if the VCR is operated or the aerial lead and/or the mains lead are disconnected.
In case the VCR stopped during Auto Tuning, the VCR has to be reset and restarted. See the following item 2.

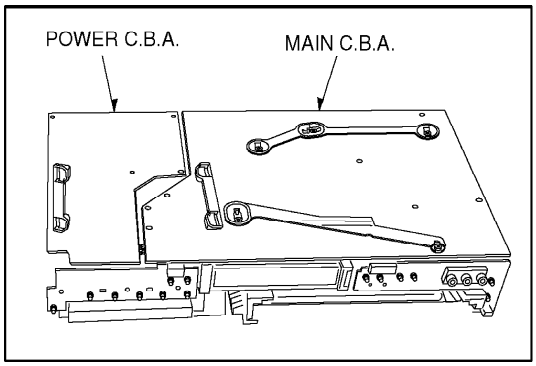
NOTE:

1. **If the VCR is turned on with the antenna not connected, all channels are skipped. Therefore, firmly connect the antenna and then turn the VCR off and on again to execute Auto tuning.**
2. **When Auto Tuning is canceled halfway, Auto Tuning is not execute even if the VCR is turned off and then turned on again, In this case, Auto Tuning has to be restarted by the following procedures.**
   A. Press EJECT and remove the Videocassette.
   B. Keep UP and DOWN on the VCR pressed simultaneously for 3 seconds or more during the VCR on.
   The channel displayed on the VCR display disappears for moment then changes to 1.
   C. Disconnect the AC mains lead and the reconnect it.
   D. Turn on the unit. Auto Tuning commences.
3. **If you turn the VCR off during Auto Tuning, Auto Tuning will stop halfway.**
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
4. **If the VCR starts playback during Auto Tuning, Auto Tuning will stop halfway.**
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
5. **To cancel Auto Tuning Mid-operation, press POWER During Auto Tuning (The VCR is turned off).**
6. **When the VCR is moved to the other area or country, TV broadcasts should be stored again.**

6.5.2. CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame. Turn the MAIN C.B.A. over as shown in Fig. S1 .

Fig. S1



6.5.3. REMOVAL OF CASSETTE TAPE

When the cassette tape could not be uninstalled from an electrical malfunction, There are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.

A. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.

B. Press STOP button in order to unload the mechanism. (Pay attention to tape slack)

Service Mode Indication:

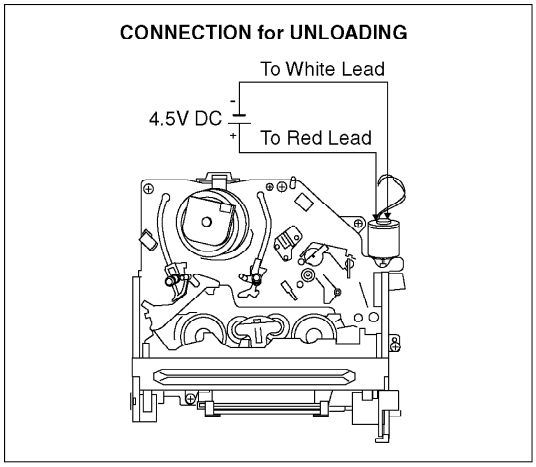
7 ** ** (STOP) → 7 0L ** (EJECT)

2. Removal by manual operation by rotating the Loading Motor with the batteries.

A. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring to the Disassembly Procedures.

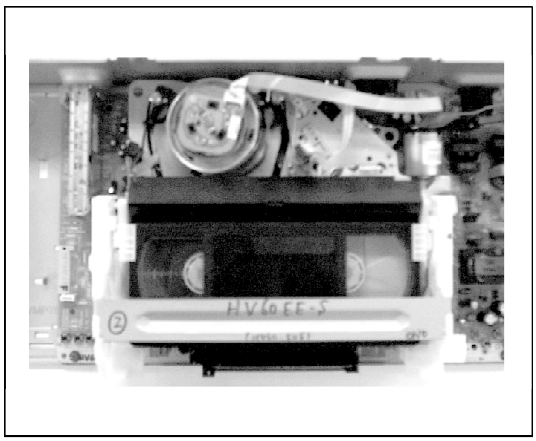
B. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor as shown in Fig. S2 .

Fig. S2



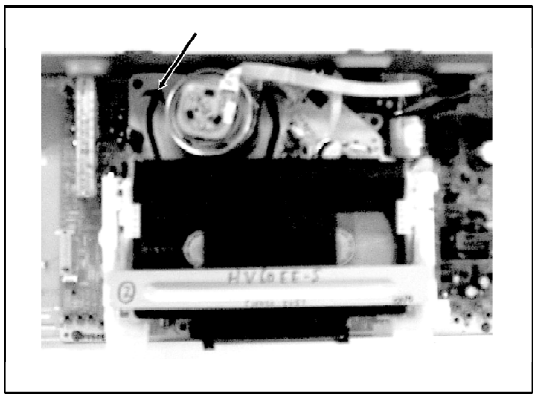
C. Stop unloading just before unloading would be completed as shown in Fig. S3 .

Fig. S3



D. Then the tape becomes slack as shown in Fig. S4 .

Fig. S4



E. Rotate the S-Reel by a small minus screwdriver (Fig. S5) to remove the slack tape as shown in Fig. S6 .

Fig. S5

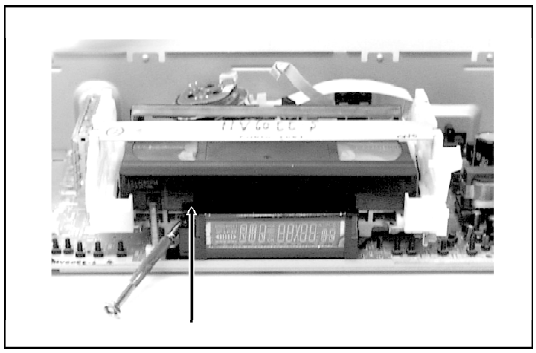
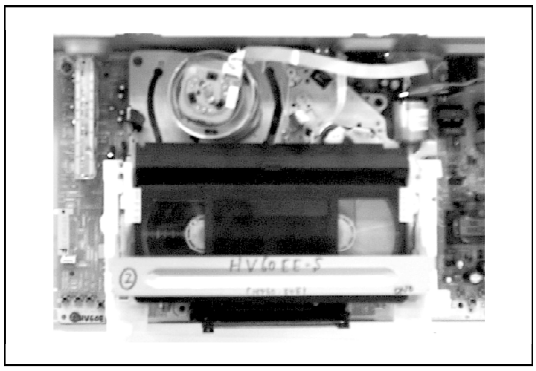
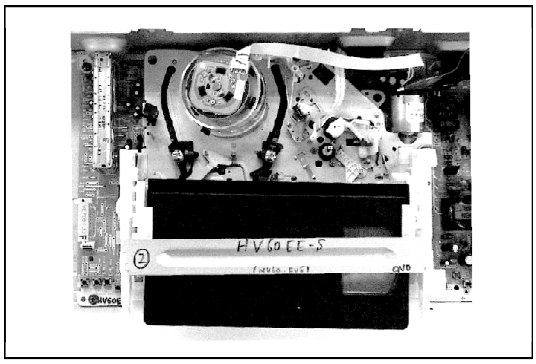


Fig. S6



F. Then unload again to remove the cassette tape as shown in Fig. S7 .

Fig. S7

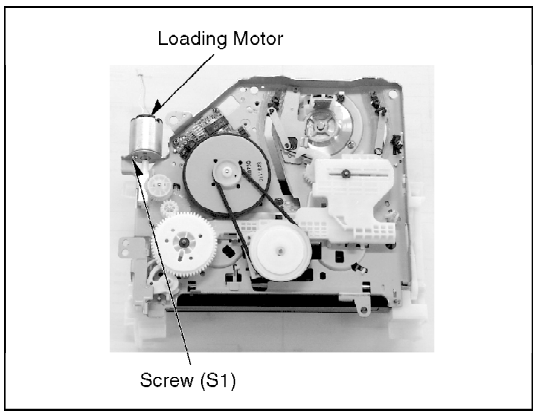


3. Removal by manual operations after uninstalling the mechanism,refer to the DISASSEMBLY METHOD of item 3.1.

A. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring to the Disassembly Procedures.

B. Remove the Screw (S1) and remove the Loading Motor both as shown in Fig. S8 .

Fig. S8

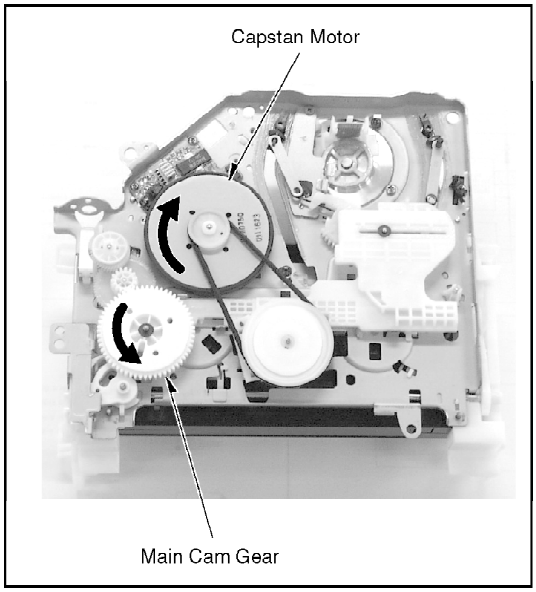


C. Rotate the Main Cam Gear counter-clockwise (Fig. S9) until just before the unloading would be completed as shown in Fig.

S3 .

D. Rotate the Capstan Motor clockwise (Fig. S9) to remove the slack tape as shown in Fig. S6 .

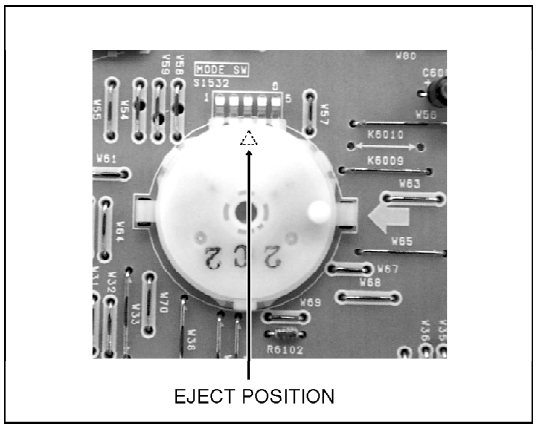
Fig. S9



E. Rotate the Main Cam Gear counter-clockwise again (Fig. S9) to remove the cassette-tape as shown in Fig. S7 .

F. Set the Position Switch to EJECT POSITION certainly as shown in Fig. S10 .

Fig. S10



G. Install the Loading Motor and tighten screw (S1) as shown in Fig. S8 .

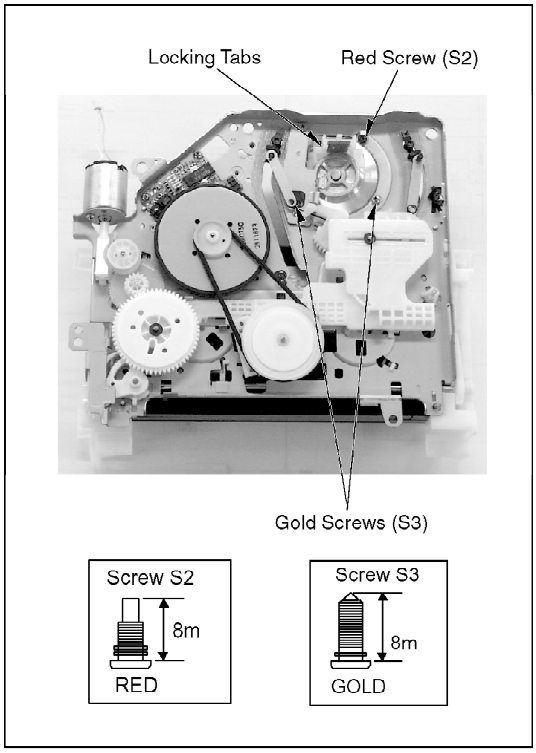
6.5.4. CYLINDER UNIT REPLACEMENT

NOTE:
Since securing of RT gap is impossible to be done outside the factory, do not replace only replace the Upper Cylinder unit of R4 Mechanism, please replace the whole Cylinder Unit with a

new one. Perform the Compatibility adjustment after replacingthe DD Cylinder Unit.

1. **Remove the Mechanism Unit from Main C.B.A./Chassis by referring to "Disassembly Procedure".**
2. **Unlock 2 locking tabs on a side to release the Cylinder Flexible Card as shown in Fig. S11 .**
   CAUTION:
   Handle the Cylinder Flexible Card with care. When it damaged, you should replace it with a new Cylinder Unit.
3. **Remove a red Screw (S2) and 2 gold Screws (S3) to remove the Cylinder Unit shown in Fig. S11 .**

Fig. S11

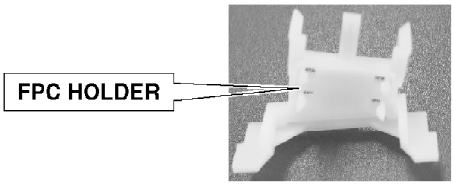


NOTE:
When reassembling, perform the steps in the reverse order, and perform the TAPE INTERCHANGEABILITY ADJUSTMENT certainly after CYLINDER UNIT REPLACEMENT.

6.5.5. ATTENTION WHEN REPLACING DD CYLINDER

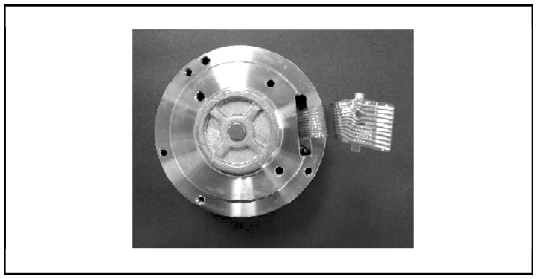
When replacing DD Cylinder Unit, follow below steps.

1. **Put the gloves on your hands.**



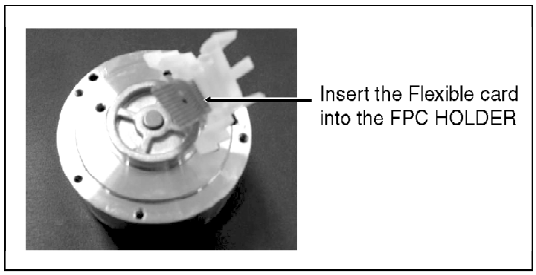
2. Turn the DD Cylinder Unit over.

Fig. S12



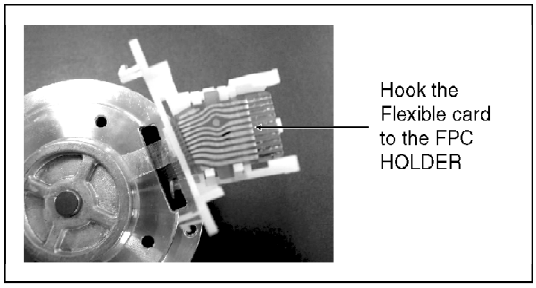
3. Insert the Flexible card into the FPC HOLDER.

Fig. S13



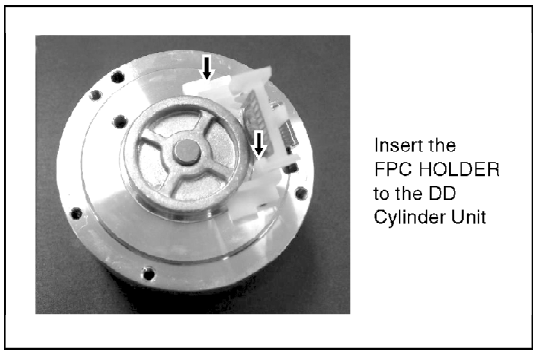
4. Hook the Flexible card to the FPC HOLDER.

Fig. S14



5. Insert the FPC HOLDER to the DD Cylinder Unit.

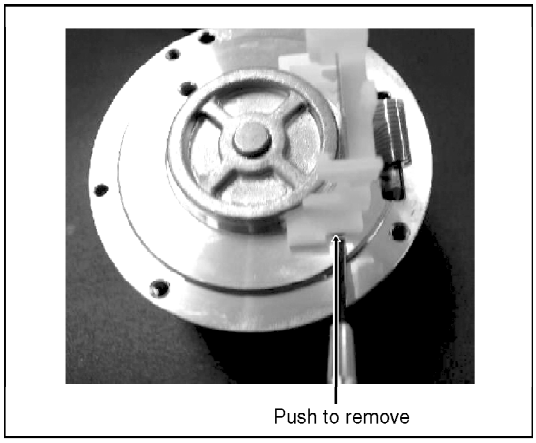
Fig. S15



6. The "COMPATIBILITY ADJUSTMENT" should be performed after the replacement of the DD Cylinder Unit.

NOTE:
In case that you have inserted the FPC HOLDER to the DD Cylinder Unit before inserting the Flexible card into the FPC HOLDER. Pushing stopper portion of the FPC HOLDER with a small minus screw driver and so on, remove the FPC HOLDER while payingattention for not to scratch the DD Cylinder and not to break the Head Chip as shown below.

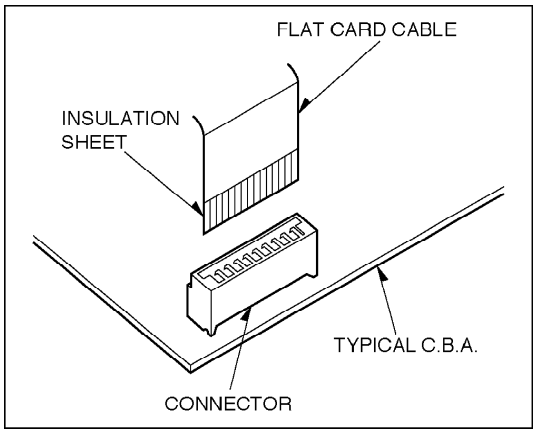
Fig. S16



6.5.6. FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.

Fig. S17



6.6. SELF-DIAGNOSIS & SERVICE INFORMATION DISPLAY

Refer to the Service Manual for R4 Mechanism Chassis.
(Order No.: VRD0202010C8).

6.7. INTRODUCTION OF VIDEO HEAD CLEANING CASSETTE / (POLISHING TYPE)

1. **We are pleased to introduce Panasonic Video Head Cleaning Cassette, VFK0923FT [for service purposes] and VFK0923FSE [for end users] for all VHS/S-VHS VCP and VCR.**
2. **These cleaning cassettes are exclusively to remove hard and sticky clogging on video heads.**
3. **These improve the efficiency of video head cleaning service and shortening cleaning time for end users.**

VFK0923FT (For Service usage)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	20 m
Usability in a Path	180 Times

VFK0923FT (For Service usage)

VFK0823FSE (For end users)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	3.34 m
Usability in a Path	30 Times

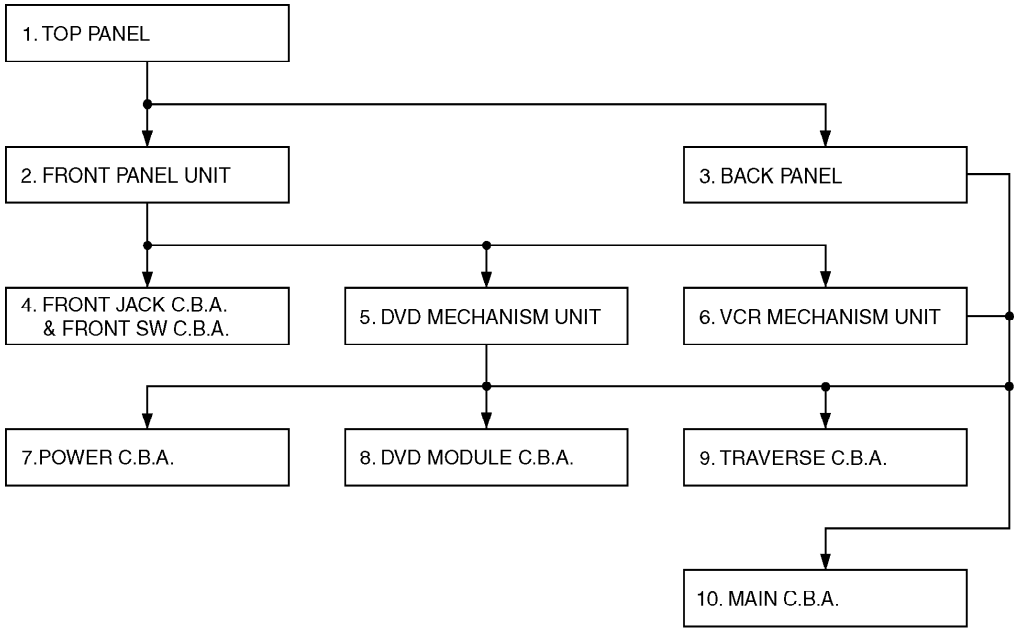
Note:

The tape material itself is the same in both types.

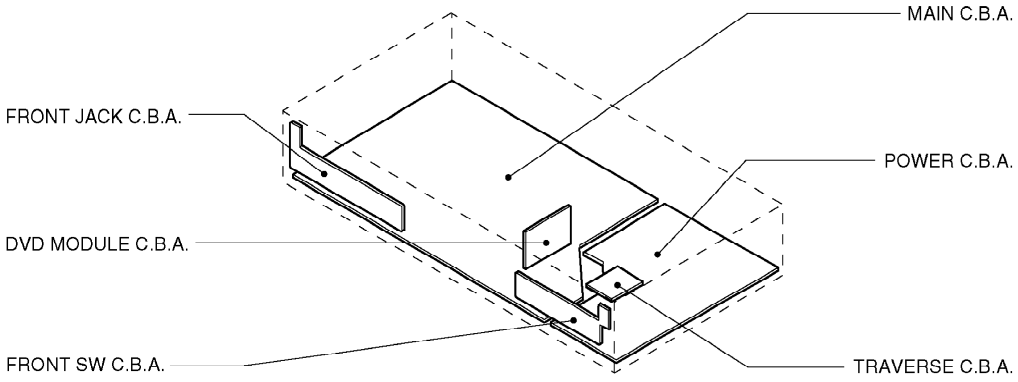
7. DISASSEMBLING THE CASING PARTS AND CIRCUIT BOARDS

7.1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the casing parts and the circuit boards in order to find the necessary items for servicing.
When reassembling, perform the steps in the reverse order.



7.2. CIRCUIT BOARD LAYOUT

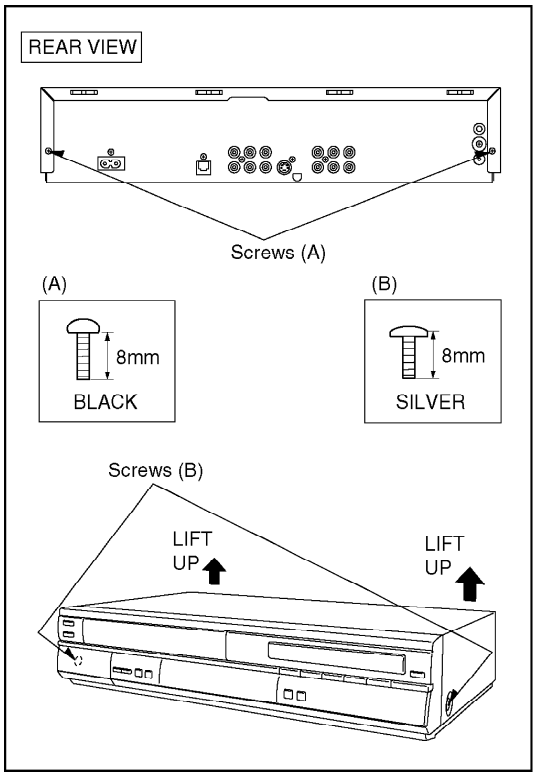


7.3. DETAIL OF THE DISASSEMBLY

1. REMOVAL OF THE PANEL

Remove	**2 Screws (A)**
Remove	**2 Screws (B)**

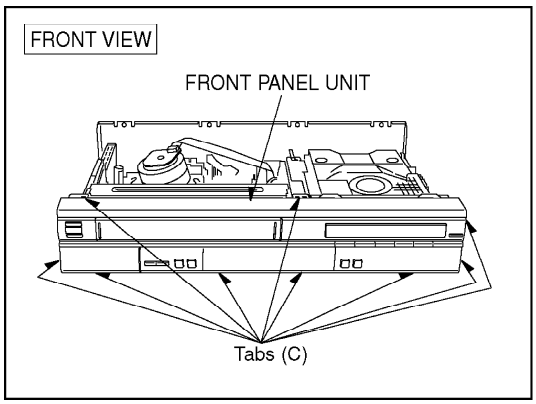
Fig. D1



2. REMOVAL OF THE FRONT PANEL UNIT

Unlock	**9 Tabs (C)**

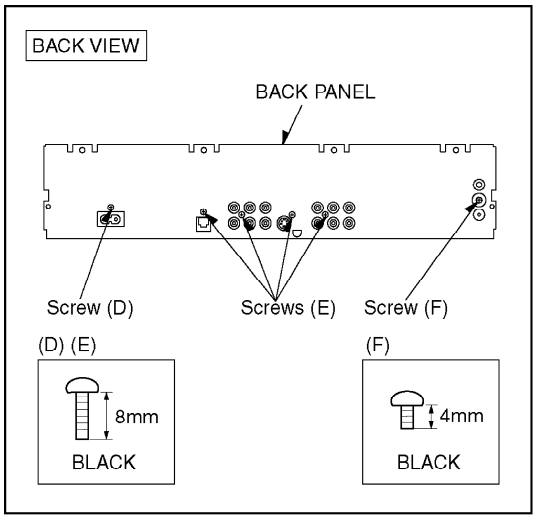
Fig. D2



3. REMOVAL OF THE BACK PANEL

Remove	**Screw (D)**
Remove	**4 Screws (E)**
Remove	**Screw (F)**

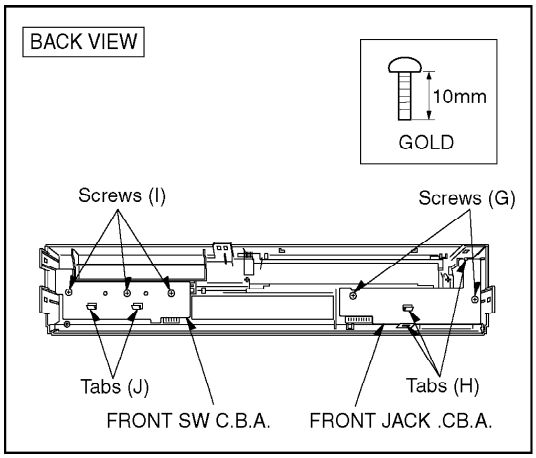
Fig. D3



4. REMOVAL OF THE FRONT JACK C.B.A. AND FRONT SW C.B.A.

REMOVAL OF THE FRONT JACK C.B.A.	
Remove	**2 Screws (G)**
Unlock	**3 Tabs (H)**
REMOVAL OF THE FRONT SW C.B.A.	
Remove	**3 Screws (I)**
Unlock	**2 Tabs (J)**

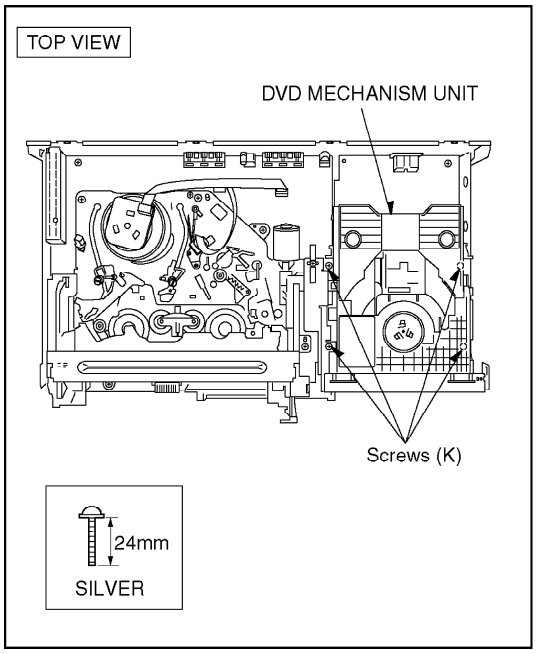
Fig. D4



5. REMOVAL OF THE DVD MECHANISM UNIT

Remove	**4 Screws (K)**

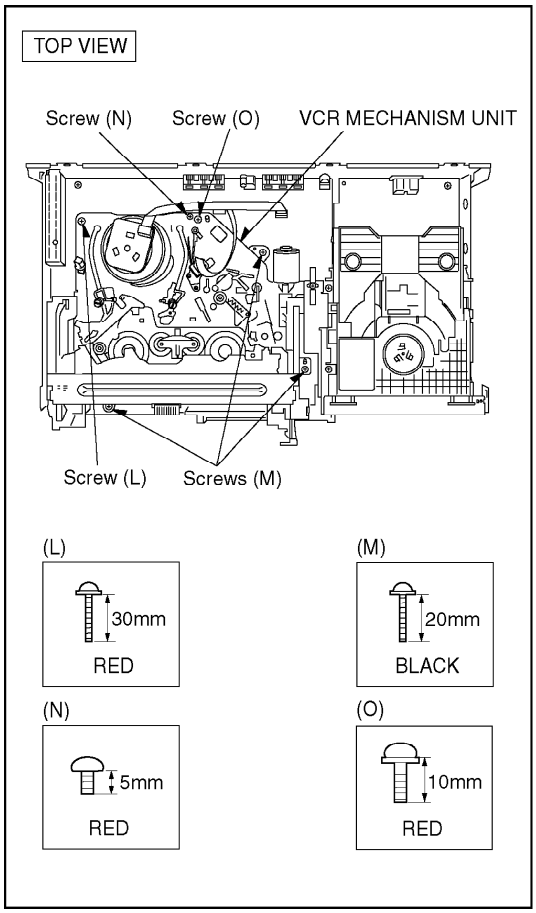
Fig. D5



6. REMOVAL OF THE VCR MECHANISM UNIT

Remove	**Screw (L)**
Remove	**3 Screws (M)**
Remove	**Screw (N)**
Remove	**Screw (O)**

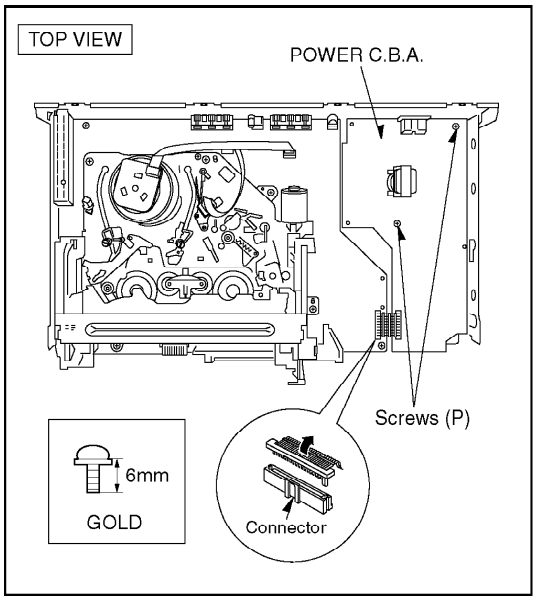
Fig. D6



7. REMOVAL OF THE POWER C.B.A.

Remove	**Screw (D) [Fig. D3]**
Remove	**2 Screws (P)**

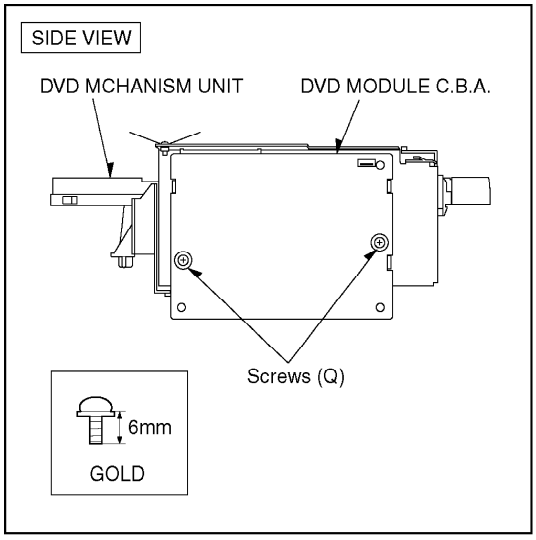
Fig. D7



8. REMOVAL OF THE DVD MODULE C.B.A.

Remove	**2 Screws (Q)**

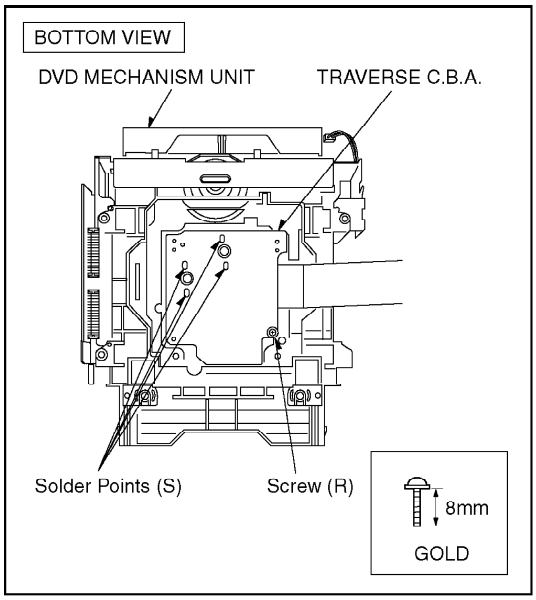
Fig. D8



9. REMOVAL OF THE TRAVERSE C.B.A.

Remove	**Screw (R)**
Unsolder	**4 Solder Points (S)**

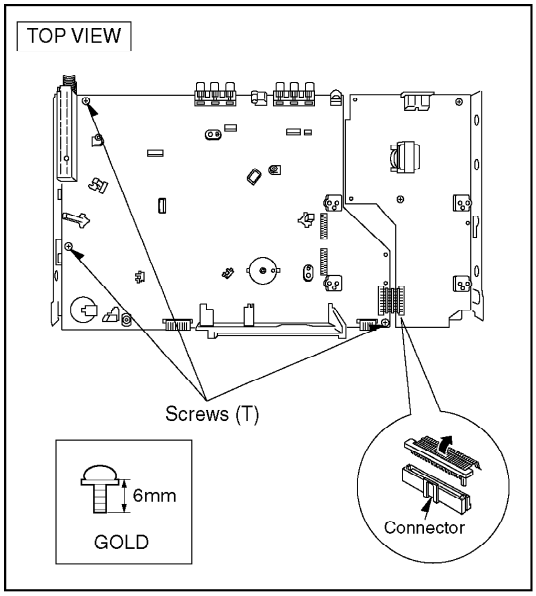
Fig. D9



10. REMOVAL OF THE MAIN C.B.A.

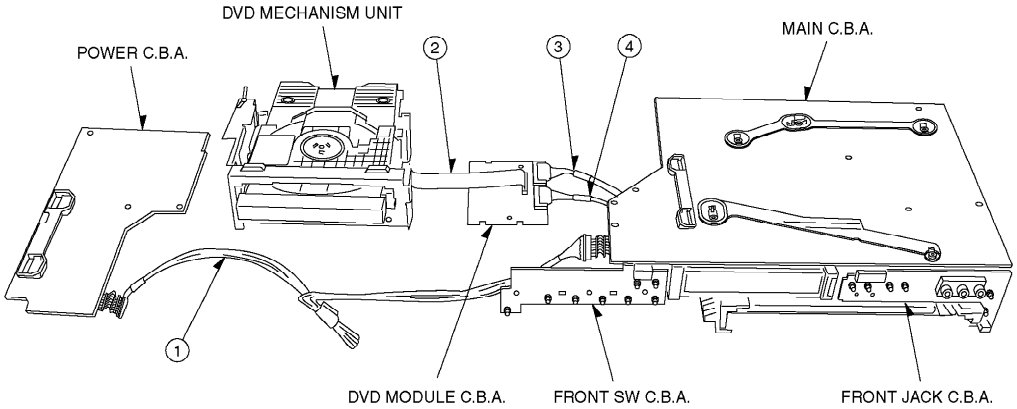
Remove	**3 Screws (T)**

Fig. D10

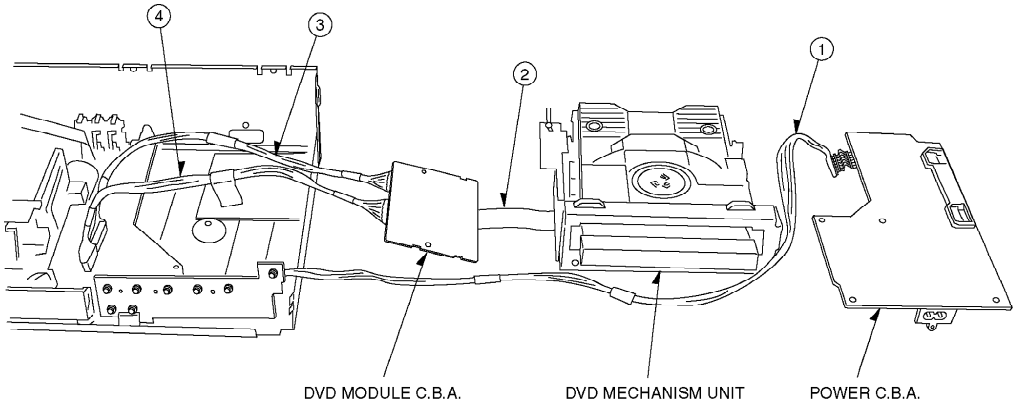


7.4. SERVICE POSITION

7.4.1. SERVICE POSITION OF THE ALL C.B.A.s



7.4.2. SERVICE POSITION OF THE POWER C.B.A. & DVD MECHANISM

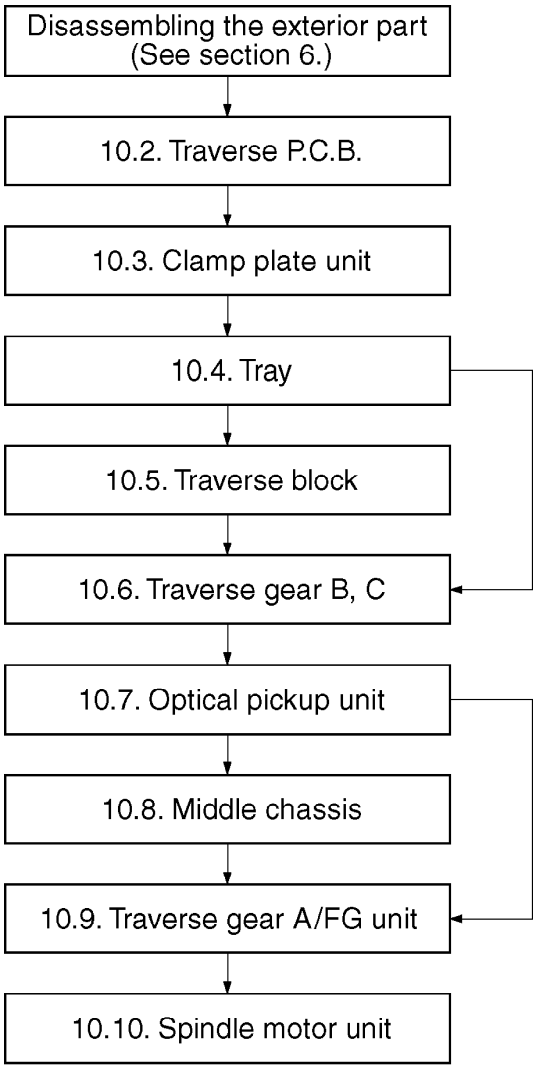


7.4.3. LIST OF THE EXTENSION CABLE

	Connection		Pin	Extension Cable	Type
□@	POWER-MAIN	P1102-P31001	19	VFK1728	Wire Cable
□A	DVD MODULE-TRAVERSE	FP5201-FP5102	50	VFK1733	FFC
□B	DVD MODULE-MAIN	P3201-P30003	18	VFK1852	Wire Cable
□C	DVD MODULE-MAIN	P4201-P30004	18	VFK1852	Wire Cable

8. ASSEMBLING AND DISASSEMBLING THE MECHANISM UNIT

8.1. Disassembly Procedure

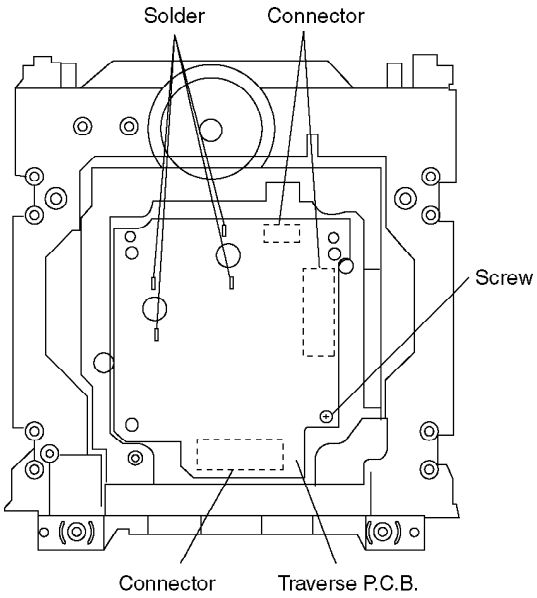


8.2. Traverse P.C.B.

1. Unscrew the screws.

2. Remove the solders.

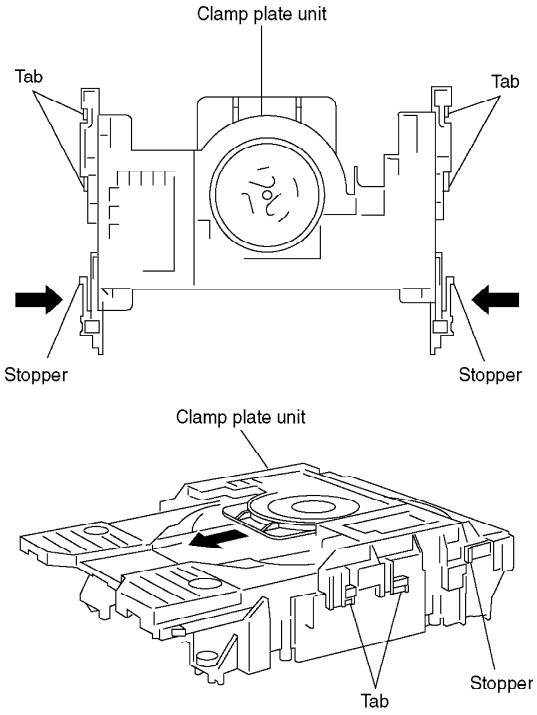
3. Remove the connectors.



<Mechanism unit bottom>

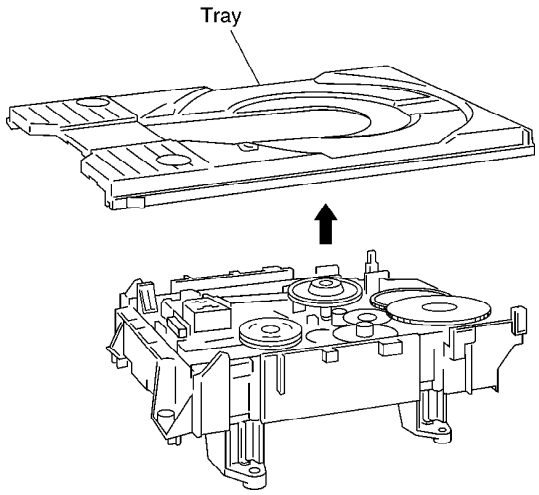
8.3. Clamp Plate Unit

1. Spread the stopper by hand to slide the tabs and remove the clamp plate unit.



8.4. Tray

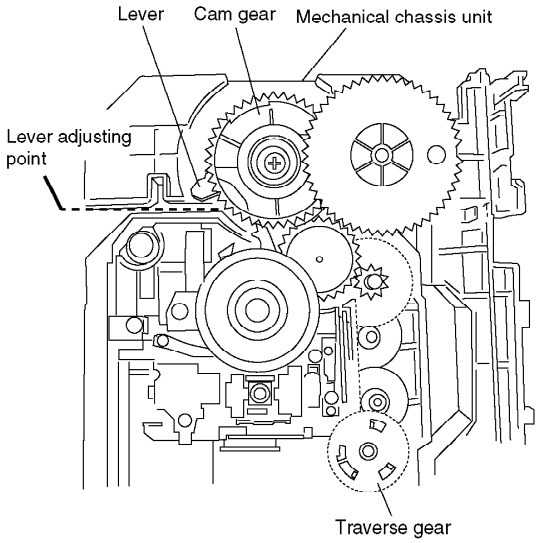
1. Lift the tray.



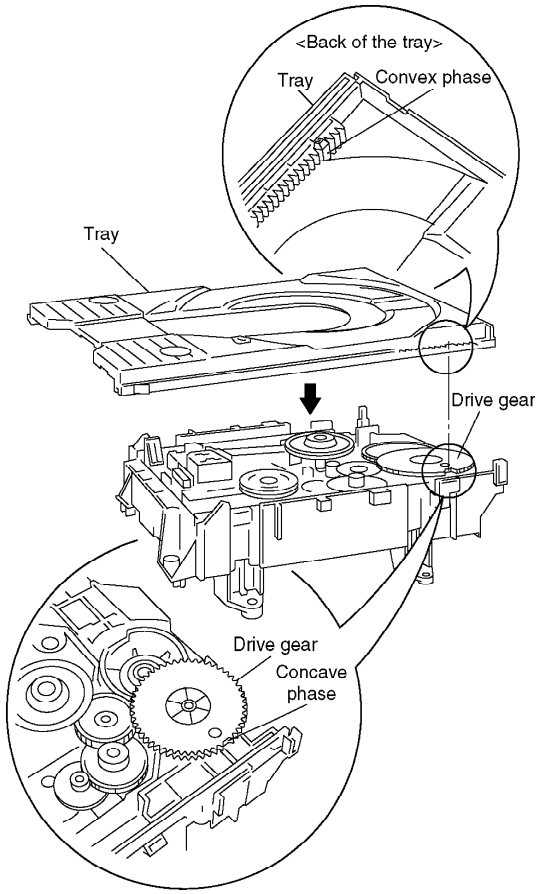
<Precautions in reassembling the tray>

● **Reassemble the tray so that it is in the backmost position.**

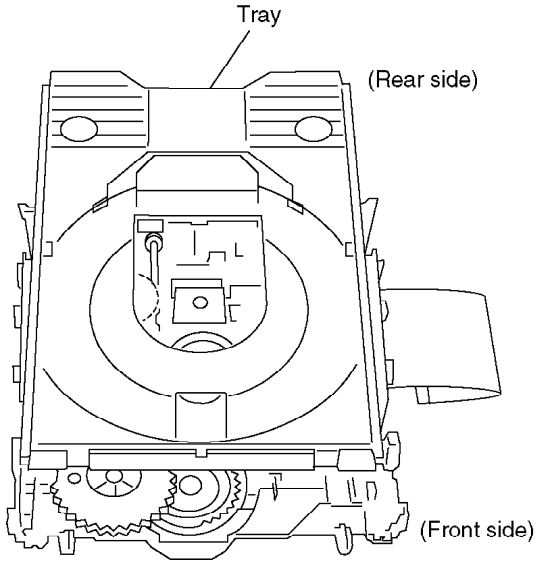
1. Turn traverse gear until cam gear leaver comes to the lever adjusting position at the end of mechanical chassis unit.



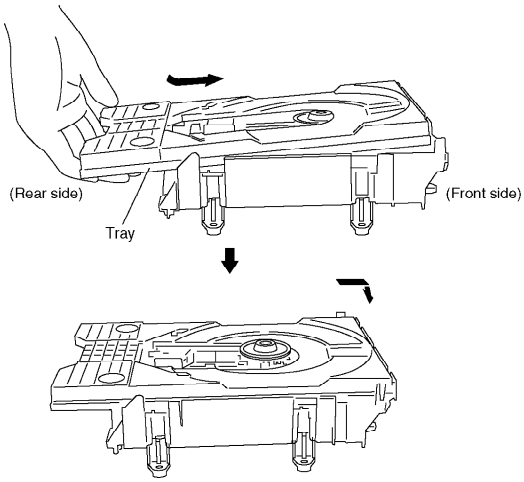
2. Check the position of convex phase on back of the tray, and that of concave phase on drive gear.



A. Place the tray on the unit from rearward.

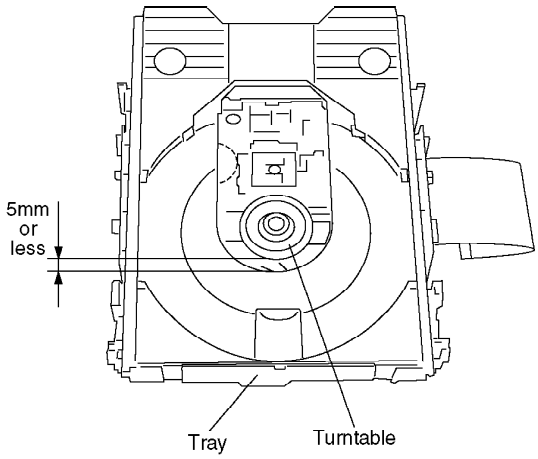


B. Inch the tray frontward until convex phase and concave phase mate.



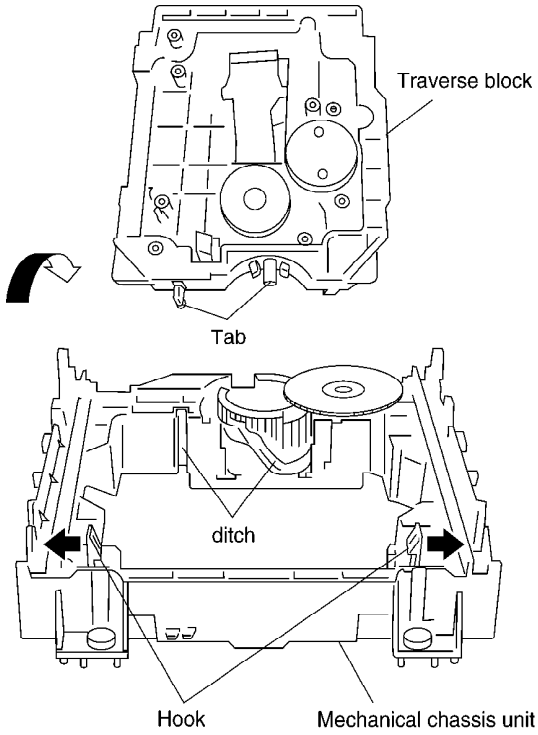
Caution:

Make sure to match convex phase and concave phase properly, so that the gap between turntable and tray becomes 5mm or less.



8.5. Traverse Block

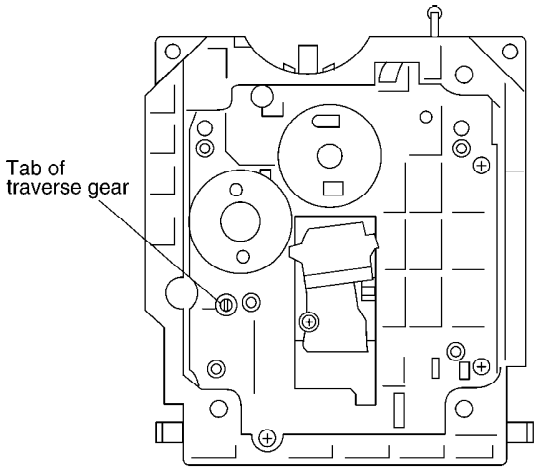
1. **Lift the traverse block while spreading the hook of the mechanical chassis unit.**
2. **Disengage the tabs from the holes of the mechanical chassis unit.**



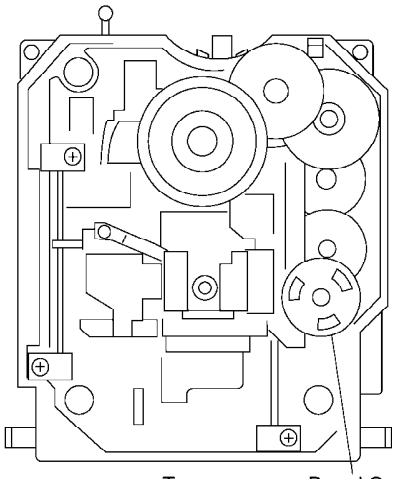
8.6. Traverse Gear

1. Disengage the tabs from the traverse gear.

2. Remove the traverse gears B and C.



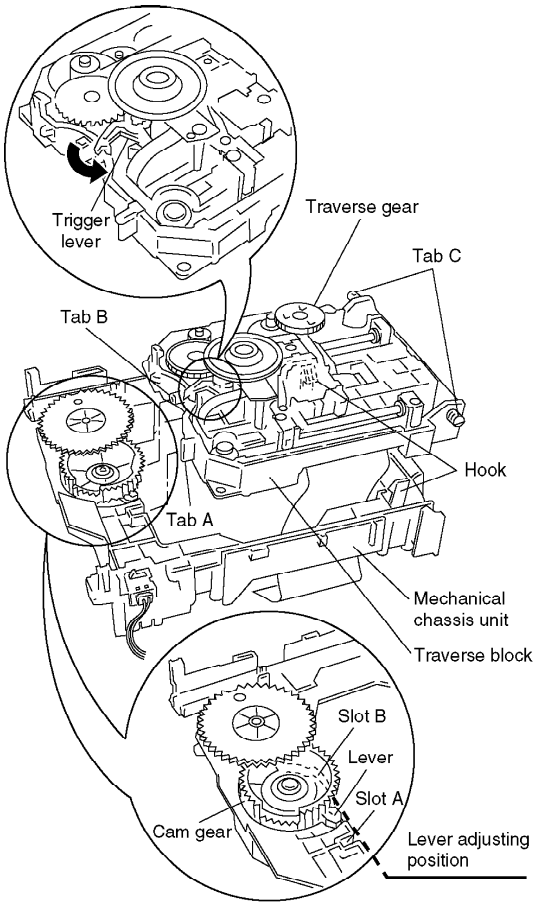
<Traverse block bottom>



<Precautions in reassembling the traverse block>

● **Take the following precautions when reassembling the traverse block.**

1. **Turn traverse gear on the traverse block to let trigger lever turn rightward. (Front view)**
2. **Bring cam gear lever to the lever adjusting position at the end of mechanical chassis unit.**
3. **Put tabs A and B into slots A and B respectively.**
   Place tabs C into hooks to mount the traverse block on mechanical chassis unit. (Slot A... Mechanical chassis unit, Slot B... Cam gear)

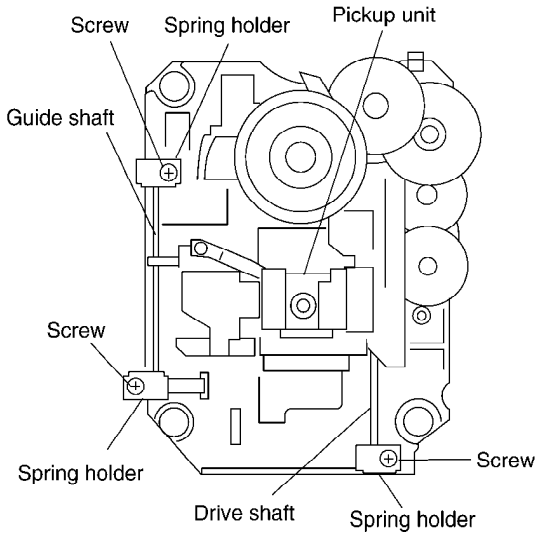


8.7. Optical Pickup Unit

1. Unscrew the screws.

2. Remove the spring holders and the springs.

3. Pull out the drive shaft and guide shaft.



8.7.1. Precautions in optical pickup replacement

The optical pickup can be damaged by static electricity from your body. Be sure to take static electricity countermeasures when working around the optical pickup. (Refer to the related page in this Manual about the countermeasures.)

1. Do not touch laser diode, actuator and their peripheries.

2. Do not use tester to check laser diode. (Laser diode can be damaged easily.)

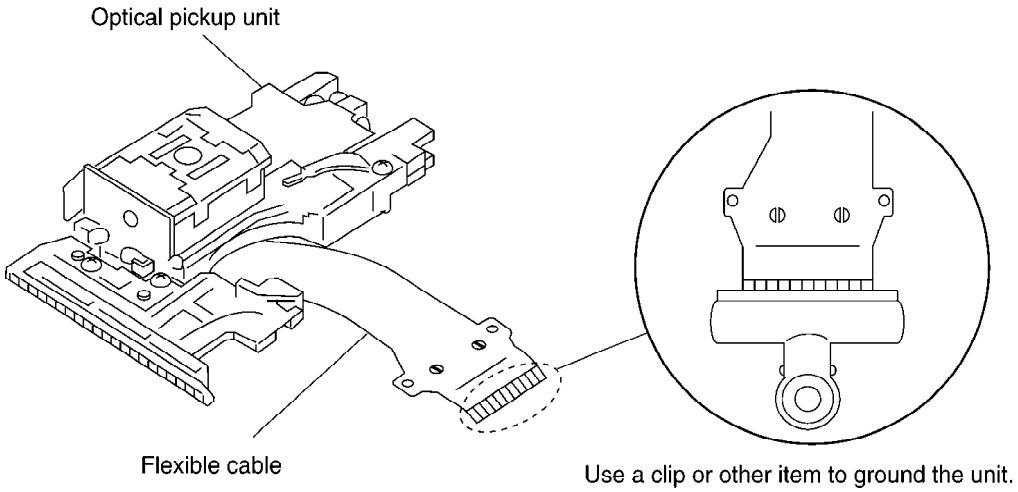
3. The use of soldering iron with anti-static feature is recommended when providing short-circuit to laser diode or when removing it.

4. Solder the land on flexible cable of optical pickup unit.

Caution

- When using the soldering iron without anti-static feature, short-circuit the flexible cable terminal with a clip before short-circuiting the land.

- After intended repair is finished, remove the solder for short-circuit of laser diode in a correct way by following the procedures described in this Manual.



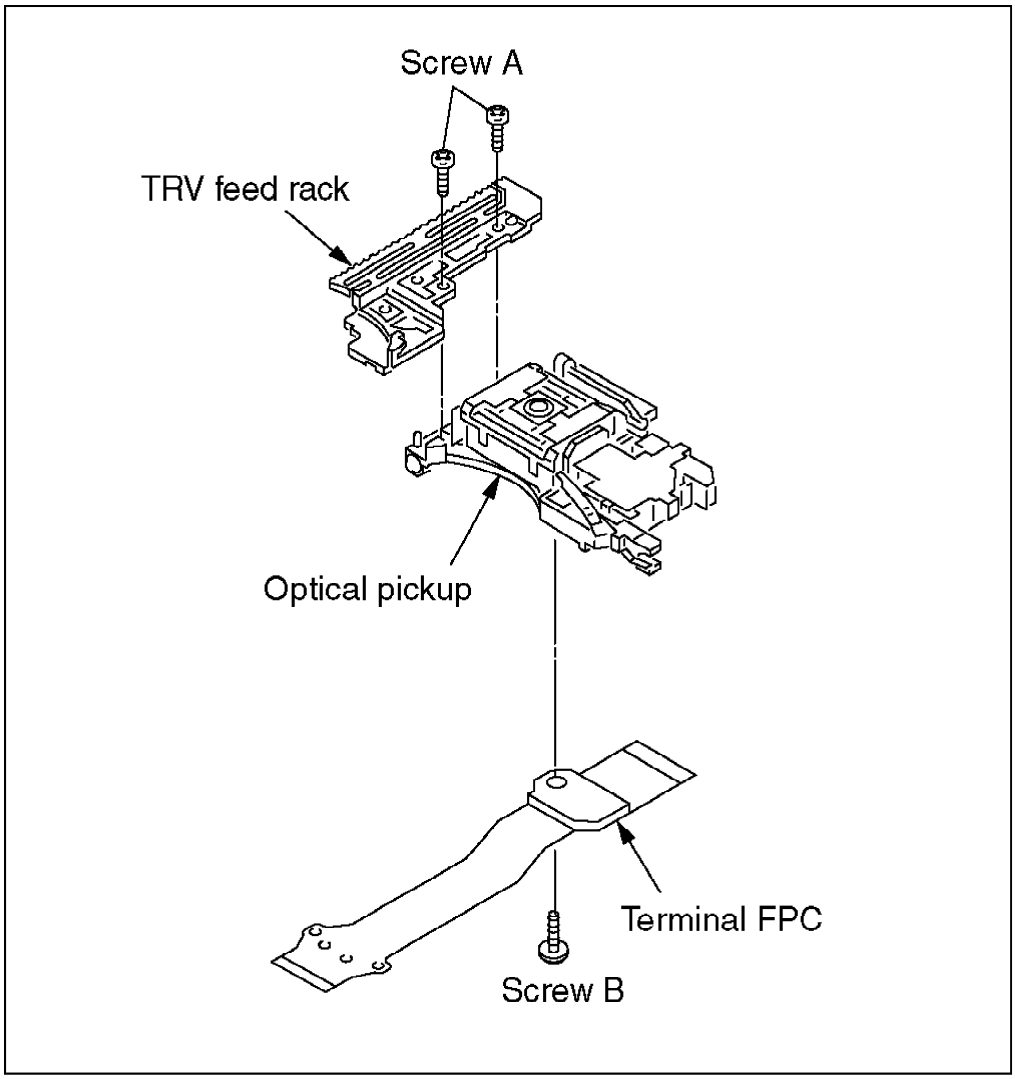
8.7.2. Disassembling the Optical Pickup Unit

1. Remove the 2 screws A and remove the TRV feed rack.

2. Remove the screw B and remove the Terminal FPC.

3. Remove the optical pickup.

Fig. 1



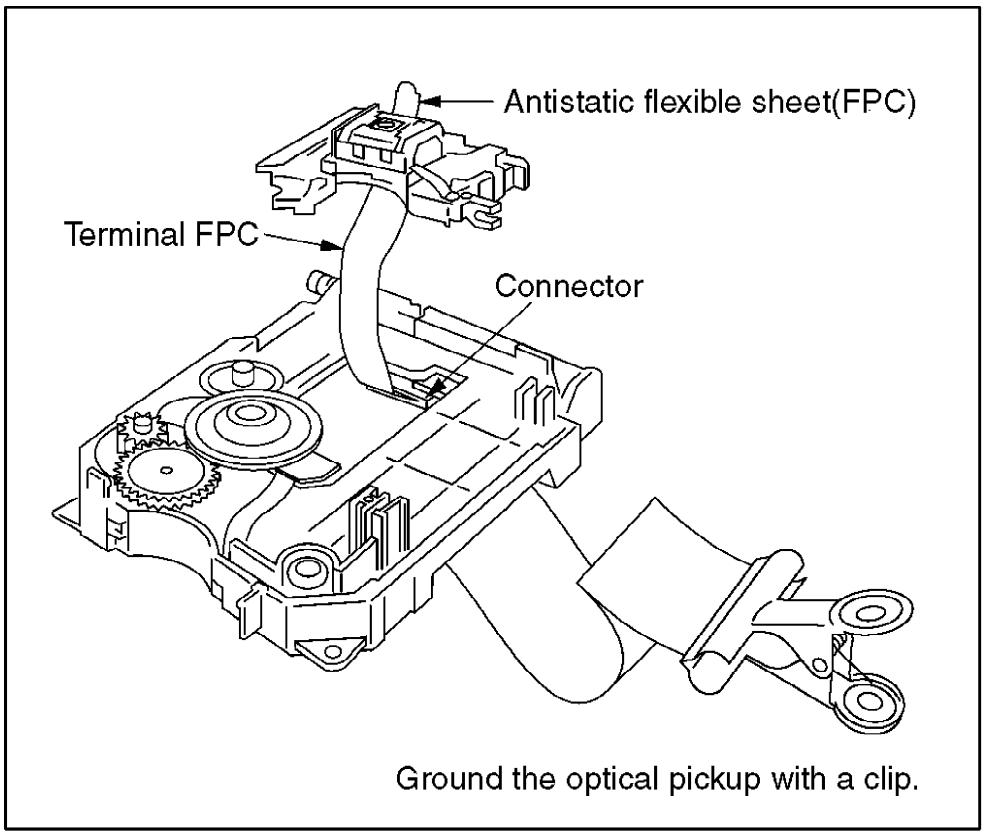
8.7.3. Cautions to Be Taken When Replacing the Optical Pickup

- An antistatic flexible sheet (FPC) is connected with the new optical pickup.
Replace the optical pickup according to the following procedure.

1. Install the Terminal FPC, TRV feed rack on the optical pickup. (See Fig. S1)

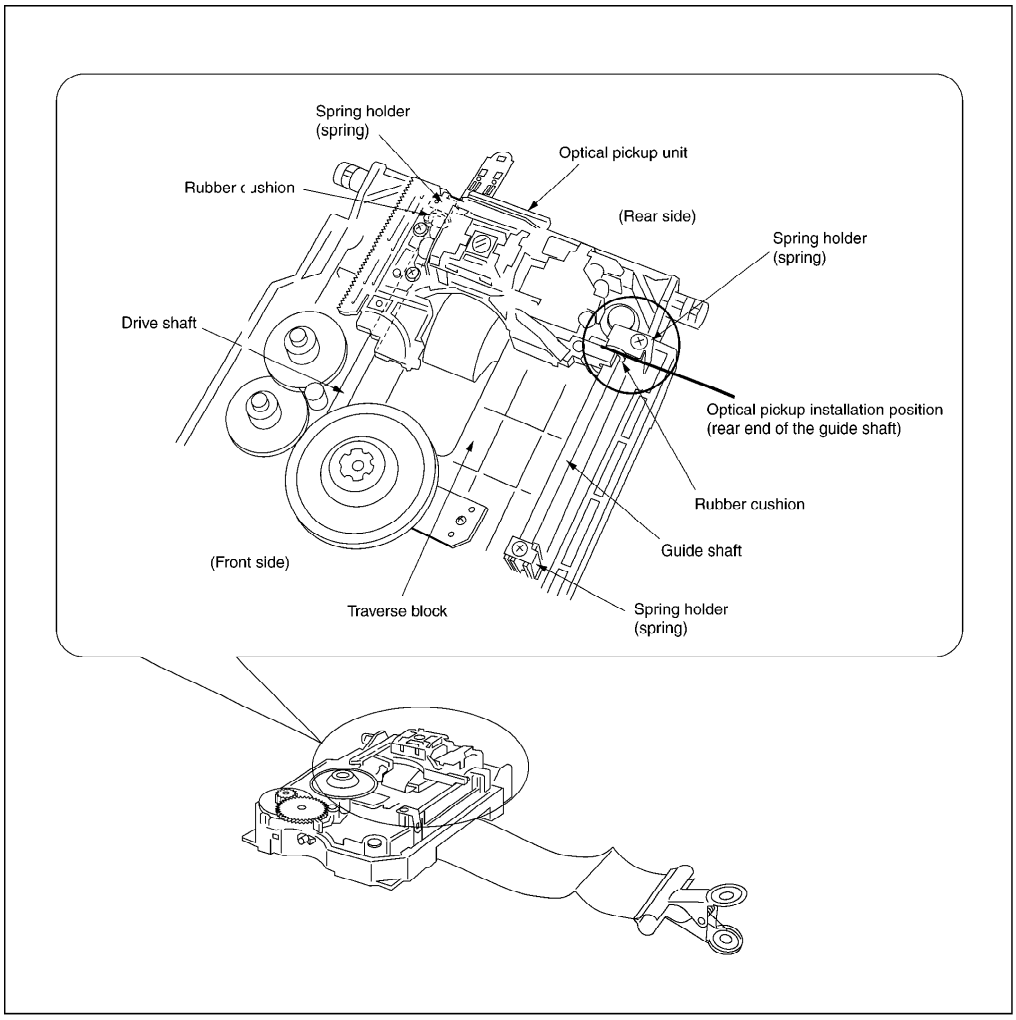
2. Install the Terminal FPC in the connector on theTraverse P.C.B..

Fig. 2



3. Install the optical pickup unit, spring, drive shaft, guide shaft, rubber cushion, and spring holder on the traverse block.

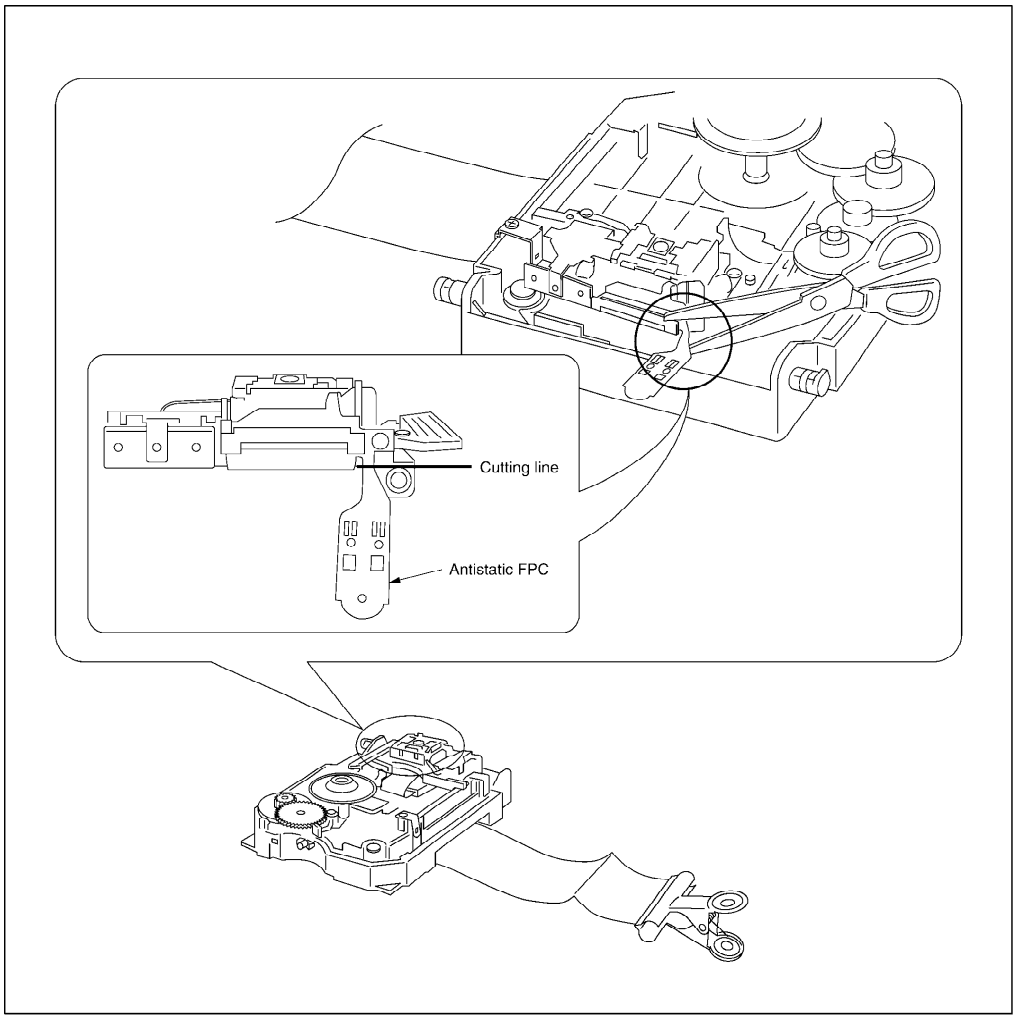
Fig. 3



Cautions to be taken when assembling the unit: Install the pickup unit so that it is located at the rear end of the guide shaft.)

4. Cut the antistatic flexible sheet for the optical pickup unit.

Fig. 4

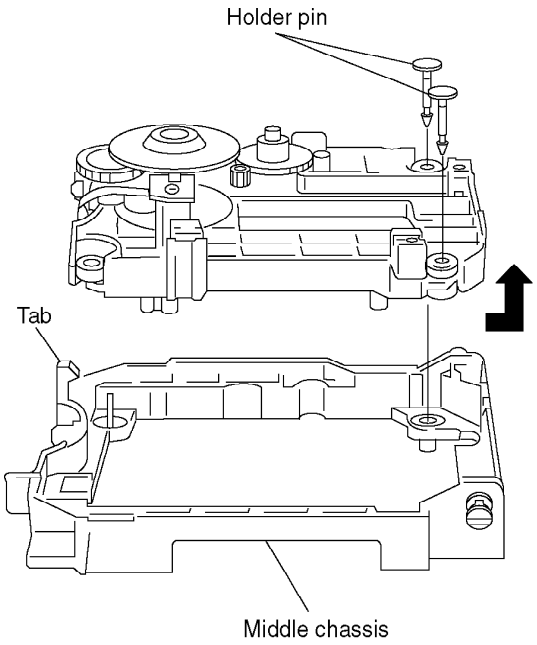


8.8. Disassembling the Middle Chassis

1. Remove the holder pins.

2. Remove the tab.

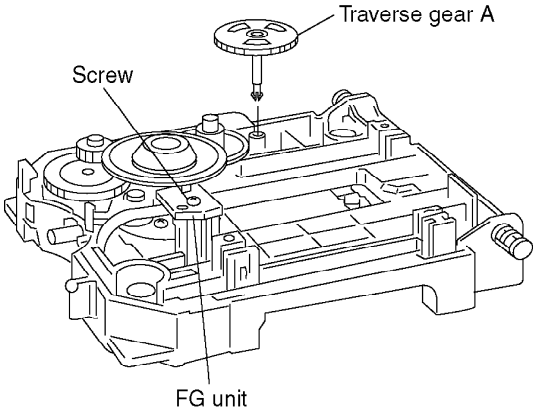
3. It lifts while pulling it in the direction of the arrow.



8.9. Disassembling the Traverse Gear A

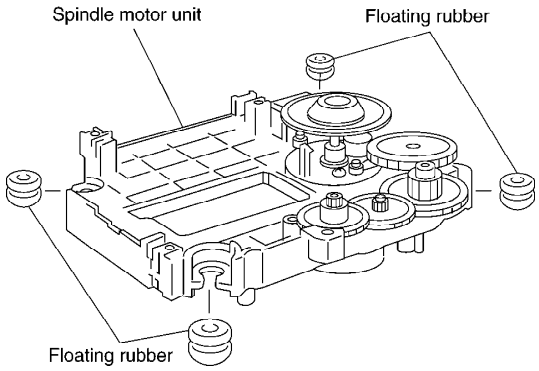
1. Unscrew the screw.

2. Remove the traverse gear A.



8.10. Disassembling the Spindle Motor Unit

1. Remove the floating rubbers.



8.11. VCR Mechanism Adjustment Procedures

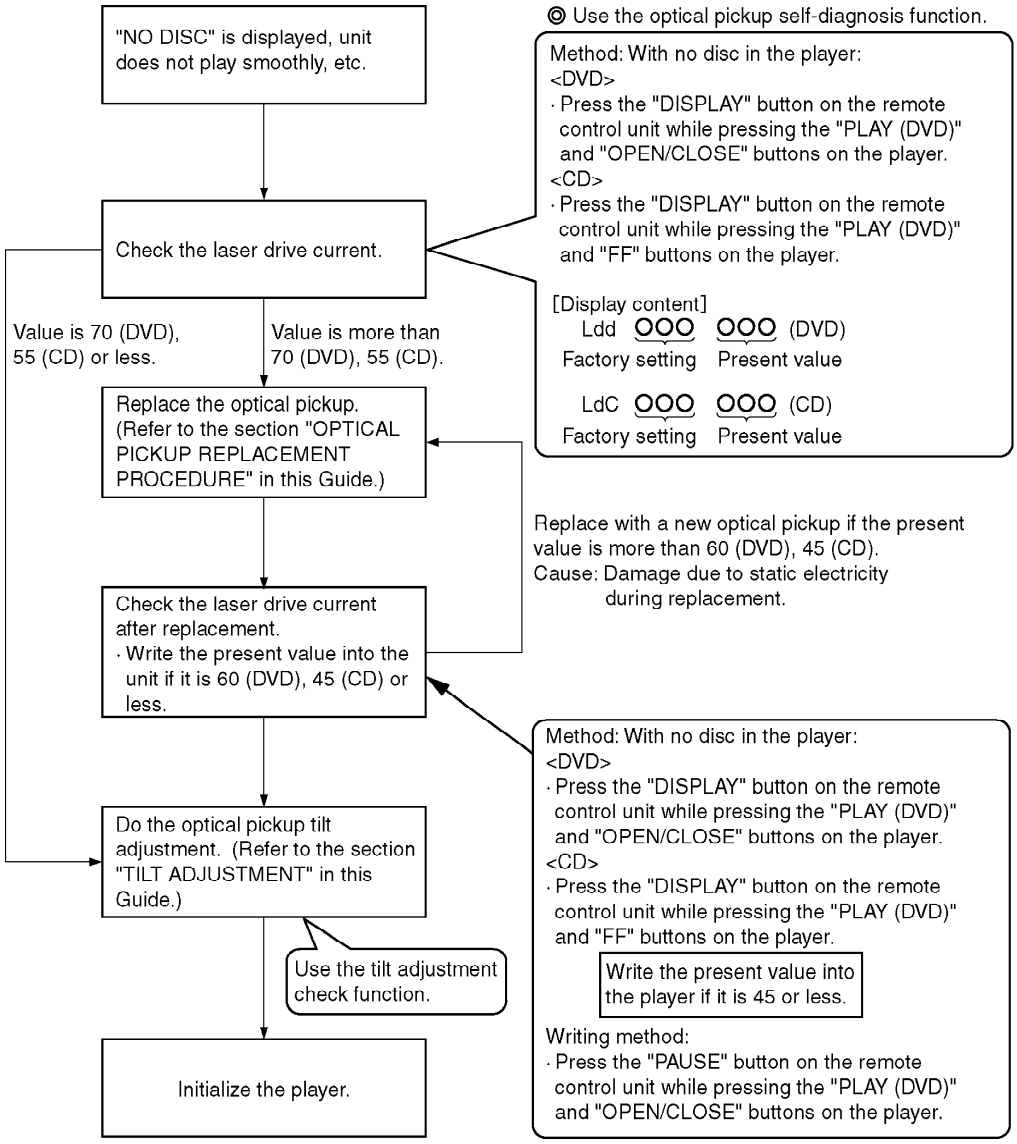
Refer to the Service Manual for R4-Mechanism Chassis. (Order No. VRD0202010C8)

9. SELF-DIAGNOSIS FUNCTION AND SERVICE MODES

9.1. Optical Pickup Breakdown Diagnosis

The optical pickup self-diagnosis function and tilt adjustment check function have been included in this unit. When repairing, use the following procedure for effective Self-diagnosis and tilt adjustment.Be sure to use the self-diagnosis functionbefore replacing the optical pickup when "NO DISC" is displayed. As a guideline, you should replace the optical pickup when the value of the laser drive current is more than 70 (DVD), 55(CD).

Note:
Press the power button to turn on the power, and check the value within three minutes before the unit warms up. (Otherwise, the result will be incorrect.)


"NO DISC" is displayed, unit does not play smoothly, etc.
Check the laser drive current.
Value is 70 (DVD), 55 (CD) or less.
Value is more than 70 (DVD), 55 (CD).
Replace the optical pickup. (Refer to the section "OPTICAL PICKUP REPLACEMENT PROCEDURE" in this Guide.)
Check the laser drive current after replacement.
· Write the present value into the unit if it is 60 (DVD), 45 (CD) or less.
Do the optical pickup tilt adjustment. (Refer to the section "TILT ADJUSTMENT" in this Guide.)
Use the tilt adjustment check function.
Initialize the player.
◎ Use the optical pickup self-diagnosis function.
Method: With no disc in the player:
<DVD>
· Press the "DISPLAY" button on the remote control unit while pressing the "PLAY (DVD)" and "OPEN/CLOSE" buttons on the player.
<CD>
· Press the "DISPLAY" button on the remote control unit while pressing the "PLAY (DVD)" and "FF" buttons on the player.
[Display content]
Ldd OOO OOO (DVD)
Factory setting Present value
LdC OOO OOO (CD)
Factory setting Present value
Replace with a new optical pickup if the present value is more than 60 (DVD), 45 (CD).
Cause: Damage due to static electricity during replacement.
Method: With no disc in the player:
<DVD>
· Press the "DISPLAY" button on the remote control unit while pressing the "PLAY (DVD)" and "OPEN/CLOSE" buttons on the player.
<CD>
· Press the "DISPLAY" button on the remote control unit while pressing the "PLAY (DVD)" and "FF" buttons on the player.
Write the present value into the player if it is 45 or less.
Writing method:
· Press the "PAUSE" button on the remote control unit while pressing the "PLAY (DVD)" and "OPEN/CLOSE" buttons on the player.

9.2. Service Mode Table 1

The service modes can be activated by pressing various button combination on the player and remote control unit.

Player buttons	Remote control unit buttons	Application	N
PLAY (DVD) + OPEN/CLOSE	0	Displaying the UHF display F_ _ _	Refer to 9.3. Self- Diagnos Functior Display)
	5	Jitter check, tilt adjustment *Display shows J_xxx_yyy_zz "yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focusdrive value. Refer to section 11.4. for Optical Pickup Tilt Adjustment Procedure.	Refer to 11.4. Op Pickup T Adjustm
	6	Checking the region numbers and broadcast system	
	7	Checking the program version	Check th FLASH I program
	9	Lighting Confirmation Function of Display Tube	
	DISPLAY	Checking the laser drive current	Refer to Pickup Replace Procedu
	PAUSE	Writing the laser drive current value after replacing the optical pickup (do not use for anything other than optical pickup replacement)	
PLAY (DVD) + REW + OPEN/CLOSE	----------	Initializing the DVD player (restoring factory preset settings)	Refer to 9.5. Initi DVD pla

9.3. DVD Self Diagnostic Function-Error Code

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3
	U, H error				
U11	Focus error				
U15	Non finalized DVD -R disc playback error				
H01	Tray loading error				
H02	Spindle servo error	(Spindle servo, DSC (IC3001) SP motor, CLV servo error)			
H03	Traverse servo error				
H04	Tracking servo error				
H05	Seek error				
H06	Power error	Cannot switch off the power because of the panel and system computer communication error			
	DSC related				
F500	DSC error	DSC (IC3001) stops in the occurence of servo error (starup, focus error, etc)	Optical pickup	ADSC (IC3001)	FEP (IC3001)
F501	DSC not Ready	DSC-system computer communication error (Communication failure caused by idling of DSC)	ADSC (IC3001)	CPU (IC3001)	
F502	DSC Time out error	Similar disposal as F500	Optical pickup	ADSC (IC3001)	FEP (IC3001)
F503	DSC communication Failure	Communication error (result error occured although communication command was sent)	ADSC (IC3001)	FEP (IC3001)	EEPROM (IC6351)
F505	DSC Attention error	Similar disposal as F500	Optical pickup	ADSC (IC3001)	FEP (IC3001)
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc	DISC	FEP (IC3001)	ADSC (IC3001)
	ODC related				
F600	Access failure to management information caused by demodulation error	Operation stopped because navigation data is not accessible caused by the demodulation defect	ODC (IC3001)	FEP (IC3001)	ADSC (IC3001)
F601	Indeterminate sector ID requested	Operation stopped caused by the request to access abnormal ID data	ODC (IC3001)	FEP (IC3001)	ADSC (IC3001)

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3
F602	Access failure to LEAD-IN caused by demodulation error	LEAD IN data unreadable			
F603	Access failure to KEYDET caused by demodulation error	Access failure to CSS data of disc			
F610	ODC abnormality	No permission for command execution	ODC (IC3001)		
F611	6626 QCODE don't read Error	Access failure to seek address in CD series	ODC (IC3001)		
F612	No CRC OK for a specific time	Access failure to ID data in DVD series	ODC (IC3001)		
F630	No reply to KEY DET enquiry	(for internal use only)			
F631	CPPM KEY DET is not available till the FILE terminal	(CPPM file system is unreadable caused by scratches)	DISC	CPPM (*1)	
F632	CPPM KEY DET is not available	Been revoked or falsified	DISC	EEPROM (IC6351)	CPPM (*1)
	Disc code				
F103	Illegal highlight Position	Big possibility of disc specification violation during highlight display	DISC		
	HIC Error				
F4FF	Force initialize failure (time out)		EEPROM (IC6351)	CPU (IC3001)	FEP (IC3001)
	Micro computer error				
F700	MBX overflow	When replying message to disc manager			
F701	Message command does not end	Next message is sent before replying to disc manager			
F702	Message command changes	Message is changed before it is sent as a reply to disc manager			
F880	Task number is not appropriate	Message coming from a non-existing task			

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3
F890	Sending message when message is being sent to AV task	Sending message to AV task			
F891	Message couldn't be sent to AV task	Begin sending message to AV task			
F893	FROM falsification		FROM (IC6301)	CPU (IC3001)	
F894	EEPROM abnormality		EEPROM (IC6351)	Serial communication on Ione	
F895	Language area abnormality	Firm version agreement check for factory preset setting failure prevention	FROM (IC6301)		
F896	No existence model	Firm version agreement check for factory preset setting failure prevention			
F897	Initialize is not completed	Initialize completion check for factory preset setting failure prevention			
F898	Disagreement of hardware and software	Unsuitable combination of AV DECORDER, SDRAM and FLASH ROM (firmware)			
F8A0	Message command is not appropriate	Begin sending message to AV task			

Note:

An error code will be canceled if a power supply is turned OFF.

***1: CPPM is the copy guard function beforehand written in the disk for protection of copyrights.**

9.4. Last Error Code saved during NO PLAY

Error code	Error Content
F0BF	6) Cannot playback because physical layer is not recoginizable
F0C0	8) DVD: Cannot playback because it is not DVD Video/Adio/VR
F0C1	9) DVD: Prohibited by the restricted region code
F0C2	A) DVD: PAL restricted playback
F0C3	B) DVD: Parental lock setting prohibits the playback of the entire title
F0C4	C) VCD: Prohibited because it is in PHOTO CD fromat
F0C5	VCD/CD: Prohibited because it is CDROM without CD-DA

9.5. Service mode table 2

Pressing various button combinations on the player and remote control unit can activate the service modes.

Item	Player mode and button combination	Function	Display	Cancellation method
Jitter check	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "5" button on the remote control unit.	Jitter check Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of one second. Read error counter starts from zero upon mode setting. When target block data failed to be read out, the counter advances by one increment. When the failure is caused by minor error, it may be corrected when retried to enable successful reading. In this case, the counter advances by one. When the error persists even after retry, the counter may jump by two or more.	J _xxx_yyy_zz Focus drive value Read error counter Jitter rate Jitter check mode Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.	Press STOP or OPEN button.
Error code check	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "0" button on the remote control unit. * With pointing of cursor up and down on display, the panel controller switches serial number of history and sends out the command accordingly.	Error code check The latest error code stored in EEPROM is displayed.	Error code (play_err) is expressed in the following convention. Error code = 0 x DAXX is expressed: → nn UXX Error code = 0 x DBXX is expressed: → nn HXX Error code = 0 x DXXX is expressed: → nn FXXX Error code = 0 x 0000 is expressed: → nn F--- * "nn" denotes the serial number of history. * "xx" denotes the error code.	Cancelled automatically 5 seconds later.
Initial setting of laser drive current	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and PAUSE button on the remote control unit.	Initial setting of laser drive currentInitial current value for each of DVD laser and CD laser is separately saved in EEPROM.	LdO_034_028 CD laser current measurement DVD laser current measurement Laser current measurement mode The value denotes the current in decimal notation. The above example shows the initial current is 34mA and 28mA for DVD laser and CD laser respectively when the laser is witched on.	Cancelled automatically 5 seconds later.
DVD laser drive current measurement	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and DISPLAY button on the remote control unit.	DVD laser drive current measurement ·DVD laser drive current is measured and the result is displayed together with the initial value stored in EEPROM. After the measurement, DVD laser emission is kept on. It is turned off when POWER key is switched off. (It is also turned off when POWER button on the player is switched off.)	Ldd_034_032 Measured current Initial current stored in EEPROM DVD laser current measurement mode The value denotes the current in decimal notation. The above example shows the initial current is 34mA and the measured value is 32mA.	Cancelled automatically 5 seconds later.
ADSC internal RAM data check	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and RETURN button on the remote control unit.	ADSC internal RAM data check ·ADSC internal RAM data is read out and displayed. Change the address with CLEAR key operation to show the data for 11 addresses.	A_OFA_6901 RAM data for specified address Address ADSC internal RAM data check mode The value is shown in hexadecimal notation. The above example shows the data in ADSC address DFAh is 6901h.	Press STOP or OPEN button.
Servo process display	In STOP (no disc) mode, press PLAY (DVD) and FF buttons on the player, and "7" button on the remote control unit.	Servo process display The servo process from STOP to ACCESS is displayed.	————	POWER OFF.
CD laser drive current measurement	In STOP (no disc) mode, press PLAY (DVD) and FF buttons on the player, and DISPLAY button on the remote control unit.	CD laser drive current measurement CD laser drive current is measured and the result is displayed together with the initial value stored in EEPROM. After the measurement, CD laser emission is kept on. It is turned off when POWER key is switched off. (It is also turned off when POWER button on the player is switched off.)	LdC_028_026 Measured current Initial current stored in EEPROM CD laser current measurement mode The value denotes the current in decimal notation. The above example shows the initial current is 28mA and the measured value is 26mA.	Cancelled automatically 5 seconds later.

Item	Player mode and button combination	Function	Display	Cancellation method
Version display	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "7" button on the remote control unit.	Version display	srrr_xxyzzz System controller release number System controller model number System controller generation Panel controller release number Panel controller model number	Cancelled automatically 5 seconds later.
Lighting of display tube	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "9" button on the remote control unit.	Lighitng of display tube	———	Repeat the same operation.
Dealer's lock	In STOP (no disc) mode, press STOP (DVD) button on the player, and POWER button on the remote control unit more than 1 second.	Dealer's lock The lock is switched ON or OFF. When dealer's lock is ON, it prohibits switching off of the secondary power and tray opening. When the lock is switched, its ON/OFF status is stored in EEPROM.	· "LOCK" sign appears when dealer's lock is switched on, or when secondary power key or tray opening key is pressed while the lock is on. ·"UNLOCK" sign appears when dealer's lock is switched off.	Repeat the same operation.
Initialization	In STOP (no disc) mode, press PLAY (DVD), REW and OPEN buttons on the player for 3 seconds or longer.	Initialization User settings are cancelled and player is initialized to factory setting.	"INIT"	
Region display	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "6" button on the remote control unit.	Region display	x__y-y__zzz Panel controller jumper information N: NTSC / 6: PAL60 N: noPAL / P: PAL Region No.	Cancelled automatically 5 seconds later.

Item	Player mode and button combination	Function	Display	Cancellation method
Timer 1 check	In STOP (no disc) mode, press PLAY (DVD) and FF buttons on the player, and "5" button on the remote control unit.	Timer 1 check Laser operation timer is measured separately for DVD laser and CD laser.	t1_1234_5678 Shown to the left is DVD laser time, and to the right CD laser time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999".	Cancelled automatically 5 seconds later.
Timer 1 reset	While displaying Timer 1 data, press STOP (DVD) and FF buttons on the player, and "5" button on the remote control unit.	Timer 1 reset Laser operation timer of both DVD laser and CD laser is reset all at once.	t1_0000_0000	Cancelled automatically 5 seconds later.
Timer 2 check	In STOP (no disc) mode, press PLAY (DVD) and FF buttons on the player, and "6" button on the remote control unit.	Timer 2 check Spindle motor operation timer	t2_12345 Time is shown in 5 digits of decimal notation in a unit of 10 hours. "00000" will follow "99999".	Cancelled automatically 5 seconds later.
Timer 2 reset	While displaying Timer 2 data, press STOP (DVD) and FF buttons on the player and "6" button on the remote control unit.	Timer 2 reset Spindle motor operation timer reset.	t2_00000	Cancelled automatically 5 seconds later.

9.6. VCR Self-Diagnosis Result Display

Refer to the Service Manual for R4-Mechanism CHassis. (Order No.: VRD0202010C8)

9.7. Sales demonstration lock function

This function prevents discs from being lost when the unit is used for sales demonstrations by disabling the disc eject function. "LOCK" is displayed on the unit, and ordinary operation is disabled.

9.7.1. Setting

The sales demonstration lock is set by simultaneously pressing STOP (DVD) button on the player and POWER button on the remote control unit more than 1 second.

9.7.2. Cancellation

The lock can be cancelled by the same procedure as used in setting. ("UNLOCK" is displayed on cancellation. Disconnecting the power cable from power outlet does not cancel the lock.)

9.8. Handling After Completing Repairs

Use the following procedure after completing repairs.

9.8.1. Method

Confirm that the power is turned on:

1. Press the "OPEN/CLOSE" button to open/close the tray.

2. Press the "POWER" button to turn on/off the power.

3. Disconnect the power plug from the outlet.

9.8.2. Precautions

When disconnecting the power plug while the tray is still open, close the tray manually.

10. SERVICE PRECAUTIONS

10.1. Recovery after the DVD player is repaired

- When FROM and/or DVD module P.C.B. has been replaced, carry out the recovering process to optimize the drive.
Playback the recovery disk to process the recovery automatically.

- Recovery disc (Product number: RFKZD03R004)

- Performing recovery

1. Load the recovery disc RFKZD03R004 on to the player and run it.
2. Recovery is performed automatically. When it is finished, a message appears on the screen.
3. Remove the recovery disc.
4. Turn off the power.

Note:
This unit requires no initialization process carried out after the traditional DVD players were repaired.
When the recovery measures are taken, the customer setting will return to the factory setting as same as the procedure described in item of "Initialization" in 9.5. is carried out. Write down the contents of the setting before recovery processing,and reset the player.

10.2. Firmware version-up of the DVD player

- In order to optimize the drive operation, the firmware of the DVD player may be renewed to improve the quality including operationability and playerbility by updating the firmware onto the substandard disc.

- After version-up, recovery processing is executed automatically.

- Part number of the recovery disc for version-up will be noticed when it is supplied.

- Updating firmware

1. Load the recovery disc that is supplied to the player and run it.

2. Firmware version of the player is automatically checked. Appropriate message appears whenever necessary.
3. Using remote controller's cursor key, select whether version updating is to be done or not. (Selection of Yes/No)
4. a. If Yes is selected, version updating is performed.
   b. If No is selected, only recovery is performed.
5. a. When updating is finished, remove the disc according to the message appearing on the screen.
   b. Remove the disc according to the message appearing on the screen.
6. Turn off the power.

Note:
If the AC power supply is shut out during version-up due to a power failure, the version-up is improperly carried out.
In such a case, replace the FROM and carry out the version-up again.

11. ADJUSTMENT PROCEDURES

11.1. Service Tools and Equipment

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S15 or DVDT-S01
	Hex wrench	Available on sales route.
Inspection	Extension cable (main P.C.B. to power supply P.C.B.)	VFK1728
	Extension cable (power supply P.C.B. to operation (R) P.C.B.)	VFK1733
	Extension cable (main P.C.B. to DVD module P.C.B.)	VFK1852 (2pcs)
Others	Grease 1	RFKXGAK152
	Grease 2	RFKXPG641
	Oil (1)	RFKXGA1280
Confirmation	CD test disc	PVCD-K06 or any other commercially available disc
	VCD test disc	PVCD-K06 or any other commercially available disc
	Recovery disc	RFKZD03R004

11.2. Important points in adjustment

11.2.1. Important points in optical adjustment

- Before starting optical adjustment, be sure to take anti-static

measures.

- Optical pickup tilt adjustment is needed after replacement of the following components.

1. Optical pickup unit
2. Spindle motor unit
3. Optical pickup peripheral parts (such as rail)

Notes

Adjustment is generally unnecessary after replacing other parts of the traverse unit. However, do adjustment if there is a noticeable degradation in picture quality. Optical adjustments cannot be made inside the optical pickup. Adjustment isgenerally unnecessary after replacing the traverse unit.

11.2.2. Important points in electrical adjustment

- Follow the adjustment procedures described in this Manual.

11.3. Storing and Handling Test Discs

- Surface precision is vital for DVD test discs. Be sure to store and handle them carefully.

1. Do not place discs directly onto the workbench, etc., after use.
2. Handle discs carefully in order to maintain their flatness. Place them into their case after use and store them vertically. Store discs in a cool place where they are not exposed to direct sunlight or air from air conditioners.
3. Accurate adjustment will not be possible if the disc is warped when placed on a surface made of glass, etc. If this happens, use a new test disc to make optical adjustments.
4. If adjustment is done using a warped disc, the adjustment will be incorrect and some discs will not be playable.

11.4. DVD Optical adjustment

11.4.1. Optical pickup tilt adjustment

Measurement point	Adjustment point	Mode	Disc
	Tangential adjustment screw Tilt adjustment screw	T01 (inner periphery) play T43 (outer periphery) play	DVDR-S15 or DVD
Measuring equipment		Adjustment value	
None (Main unit display for servicing is used.)		Adjust to the minimum jitter value.	

11.4.1.1. Adjustment procedure

1. **Place the Unit in SERVICE POSITION**
2. **While pressing PLAY (DVD) and OPEN/CLOSE buttons on the main unit, press "5" on the remote control unit simultaneously.**
3. **Confirm that "J_xxx_yyy_zz" is shown on the front display.**

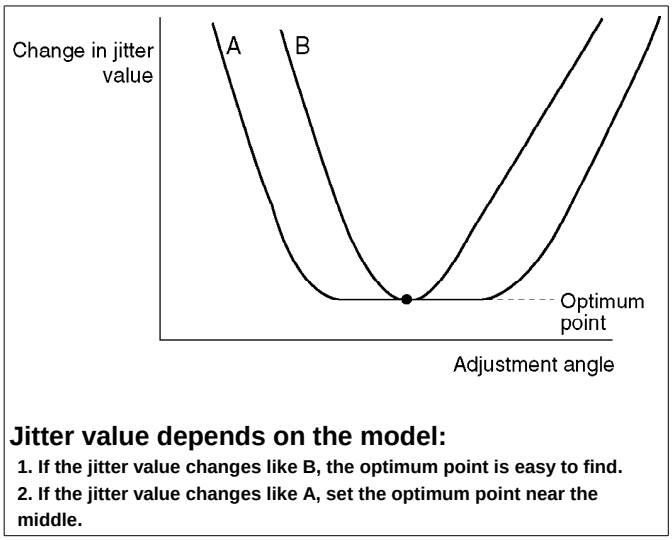
For your information:
"yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focus drive value.

Note:
Jitter value appears on the front display.

4. **Play test disc T01 (inner periphery).**
5. **Adjust tangential adjustment screw so that the jitter value is minimized.**
6. **Play test disc T43 (outer periphery).**
7. **Adjust tilt adjustment screw 1 so that the jitter value is minimized.**
8. **Play test disc T43 (outer periphery).**
9. **Adjust tilt adjustment screw 2 so that the jitter value is minimized.**
10. **Repeat adjusting tilt adjustment screws 1 and 2 alternately until the jitter value is minimized.**

11.4.1.2. Important points

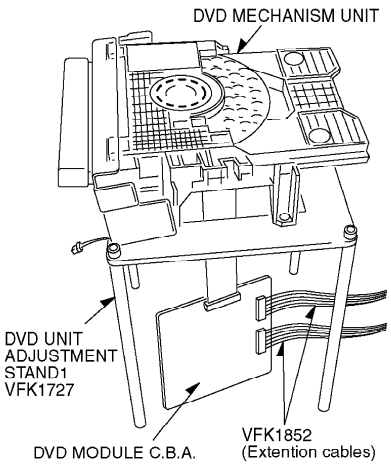
1. **Do tangetial adjustment first, then tilt adjustment.**
2. **Repeat adjusting two or three times to find the optimum point.**
3. **Finish the procedure with tilt adjustment.**



Jitter value depends on the model:

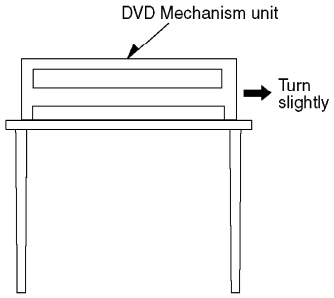
1. If the jitter value changes like B, the optimum point is easy to find.

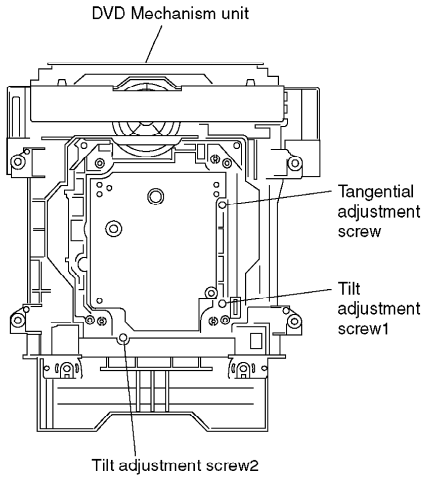
2. If the jitter value changes like A, set the optimum point near the middle.



Note:

When adjust Tilt adjustment screw 2, turn the DVD unit slightly so that the Tilt adjustment screw 2 could be adjusted.



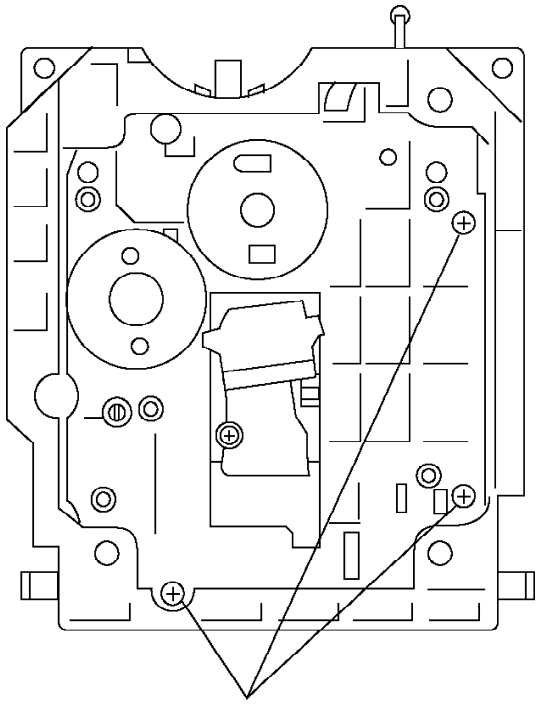


11.4.1.3. Check after adjustment

Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries, and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

11.4.1.4. Procedure for screw lock

1. **After adjustment, remove top cover, tray, clamper base and traverse unit in this sequence.**
2. **Lay the traverse unit upside down, and fix adjustment screw with screw lock.**
3. **After fixing, reassemble traverse unit, clamper base, tray and top cover.**



Screw lock
(adjustment screw)

11.5. VCR ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete adjustment procedures required for electric circuits of VCR.

11.5.1. TEST EQUIPMENT

The following items will be required when performing electrical adjustment.

1. VHS Alignment Tape. (VFJ8125H3F)

2. Monitor

11.5.2. SERVO SECTION

PG SHIFTER ADJUSTMENT

	PROCEDURE	F.I.P. DISPLAY
1.	**Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.**	
2.	**Activate the Service Mode 2 While keep pressing FF key, press the EJECT key in twice.**	
3.	**Activate the Entering Mode. Press the EJECT key for more than 3 seconds.**	
4.	**Set the Mode 2. Press the CH UP key once.**	
5.	**Insert the alignment cassette tape (VFJ8125H3F) The PG Shifter Adjustment starts automatically.**	
6.	**When the sequence of the automatic adjustment has been terminated, the following action has been made.** *** SUCCEED: The cassette tape is ejected.** *** ERROR: The "F20", "F21", "F22" or "F23"is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.**	
7.	**Exit from Service Mode. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.**	

PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	**NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)**
F21	**NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)**
F22	**NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.**
F23	**NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)**

NOTE:
After replacing the DD Cylinder, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) should be performed after the PG Shifter Automatic Adjustment.

12. ABBREVIATIONS

[DVD SECTION]

INITIAL/LOGO		ABBREVIATIONS
A	**A0~UP**	**ADDRESS**
	ACLK	**AUDIO CLOCK**
	AD0~UP	**ADDRESS BUS**
	ADATA	**AUDIO PES PACKET DATA**
	ALE	**ADDRESS LATCH ENABLE**
	AMUTE	**AUDIO MUTE**
	AREQ	**AUDIO PES PACKET REQUEST**
	ARF	
	ASI	**AUDIO RF**
	ASO	**SERVO AMP INVERTED INPUT**
	ASYNC	**SERVO AMPOUTPUT**
		AUDIO WORD DISTINCTION SYNC

INITIAL/LOGO		ABBREVIATIONS
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR
	CBDO	VELOCITY
	CD	CAP. BLACK DROP OUT
	CDSCK	COMPACT DISC
	CDSRDATA	CD SERIAL DATA CLOCK
		CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCKSELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIPSELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT

INITIAL/LOGO		ABBREVIATIONS
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ
	DMUTE	CLOCK
	DO	DIGITAL MUTE CONTROL
	DOUT0~UP	DROP OUT
		DATAOUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	
	DVD	DATA SLICE LOOP FILTER
		DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL
		REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/
	ETSCLK	40.5MHz)
		EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP
	FEO	INVERTED INPUT
	FG	FOCUS ERROR AMP OUTPUT
	FSC	FREQUENCY GENERATOR
	FSCK	FREQUENCY SUB CARRIER
		FS (384 OVER SAMPLING)
		CLOCK
G	GND	COMMON GROUNDING
		(EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE

INITIAL/LOGO		ABBREVIATIONS
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORYSERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK / PLLOK	CHANNEL PLL CLOCK PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVEA
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE
	RS	OUTPUT
	RSEL	(CD-ROM) REGISTER SELECT
	RST	RF POLARITY SELECT
	RSV	RESET
		RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK
	SCL	RECEIVER
	SCLK	SERIAL CLOCK
	SDA	SERIAL CLOCK
	SEG0~UP	SERIAL DATA
	SELCLK	FL SEGMENT OUTPUT
	SEN	SELECTCLOCK
	SIN1, 2	SERIAL PORT ENABLE
	SOUT1, 2	SERIAL DATA IN
	SPDI	SERIAL DATA OUT
	SPDO	SERIAL PORT DATA INPUT
	SPEN	SERIAL PORT DATA OUTPUT
	SPRCLK	SERIAL PORT R/W ENABLE
	SPWCLK	SERIAL PORT READ CLOCK
	SQCK	SERIAL PORT WRITE CLOCK
	SQCX	SUB CODE Q CLOCK
	SRDATA	SUBCODE Q DATA READ
	SRMADR	CLOCK
	SRMDT0~7	SERIAL DATA
		SRAM ADDRESS BUS
	SS	SRAM DATA BUS 0~7
	STAT	START/STOP
	STCLK	STATUS
	STD0~UP	STREAM DATA CLOCK
	STENABLE	STREAM DATA
		STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY
	STVALID	SELECT
	SUBC	STREAM DATAVALIDITY
	SBCK	SUB CODE SERIAL
	SUBQ	SUB CODE CLOCK
	SYSCLK	SUB CODE Q DATA

	SYSCLK	SYSTEM CLOCK

INITIAL/LOGO		ABBREVIATIONS
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSSSIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE SOURCE POWER SUPPLYVOLTAGE
	VSS	
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER

INITIAL/LOGO		ABBREVIATIONS
X	X	X' TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPTREQUEST
	XI	X' TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X' TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIPSELECT
	XVDS	X V-DEC CONTROL BUS
	XVSYNCO	STROBE X VERTICAL SYNC OUTPUT

[VCR SECTION]

13. INPUT/ OUTPUT CHART

13.1. INPUT/ OUTPUT CHART FOR IC6001

14. WAVEFORM TABLE & VOLTAGE CHART

14.1. WAVEFORM TABLE

14.2. VOLTAGE CHART

15. BLOCK DIAGRAMS

15.1. POWER BLOCK DIAGRAM

15.2. SYSTEM CONTROL & SERVO BLOCK DIAGRAM

15.3. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

15.4. AUDIO BLOCK DIAGRAM

15.5. DVD INTERFACE BLOCK DIAGRAM

15.6. DVD (SERVO) BLOCK DIAGRAM

15.7. DVD (VIDEO/AUDIO) BLOCK DIAGRAM

16. SCHEMATIC DIAGRAMS

16.1. POWER SCHEMATIC DIAGRAM

16.2. POWER SUPPLY/RF SECTION IN MAIN SCHEMATIC DIAGRAM

16.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

16.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

16.5. LUMINANCE & CHROMINANCE/AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

16.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

16.7. DECORDER SECTION IN MAIN SCHEMATIC DIAGRAM (NV-VP31GL)

16.8. DVD INTERFACE SECTION IN MAIN SCHEMATIC DIAGRAM

16.9. FRONT SW SCHEMATIC DIAGRAM

16.10. FRONT JACK SCHEMATIC DIAGRAM

16.11. HIND SECTION IN DVD MODULE SCHEMATIC DIAGRAM

16.12. FORE SECTION IN DVD MODULE SCHEMATIC DIAGRAM

16.13. DV1 SECTION IN DVD MODULE SCHEMATIC DIAGRAM

16.14. FLASH MEMORY SECTION IN DVD MODULE SCHEMATIC DIAGRAM

16.15. AUDIO SECTION IN DVD MODULE SCHEMATIC DIAGRAM

16.16. TRAVERSE SCHEMATIC DIAGRAM

17. CIRCUIT BOARD ASSEMBLIES

17.1. POWER C.B.A.

17.2. MAIN C.B.A.

17.3. FRONT SW C.B.A.

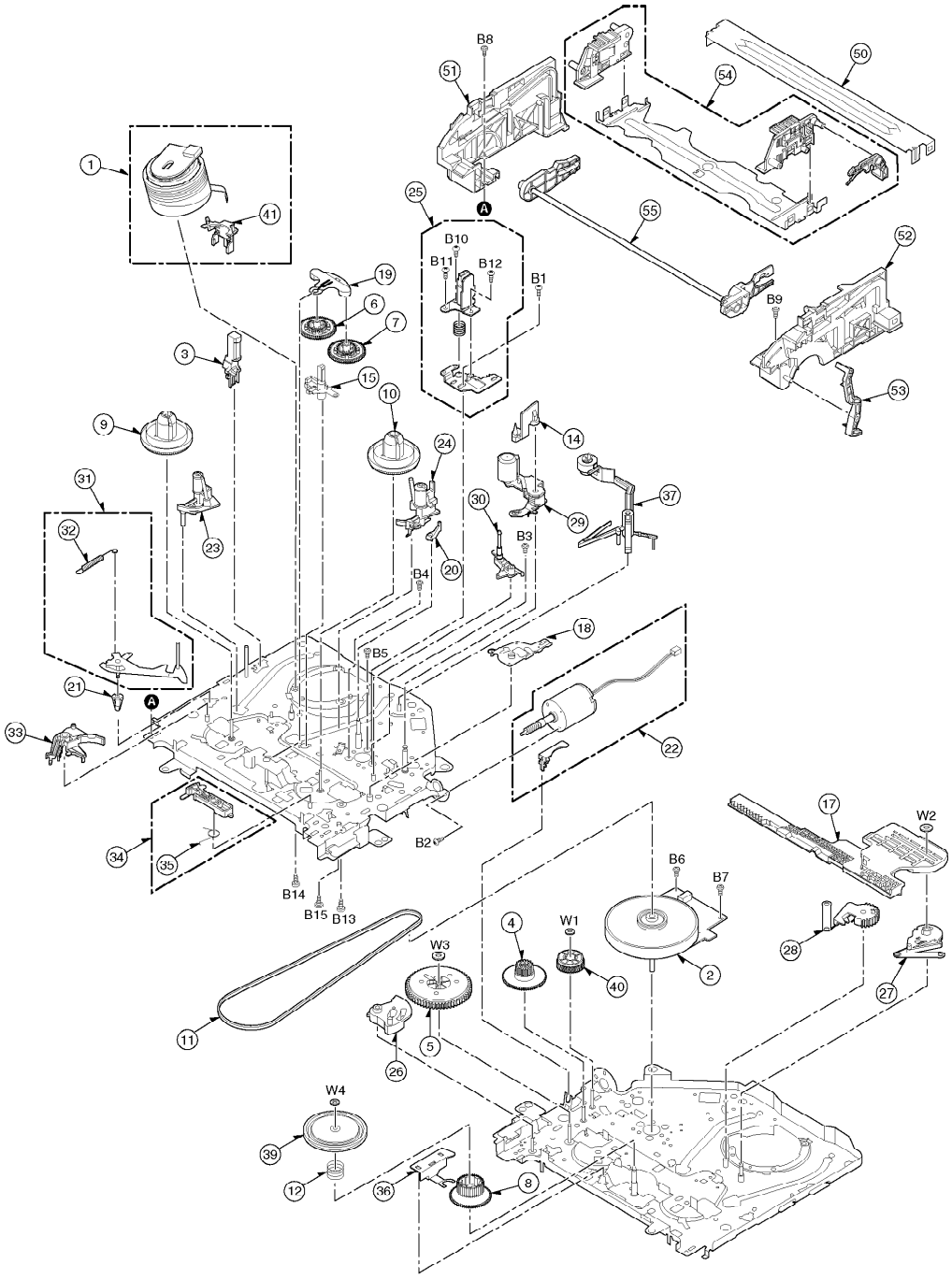
17.4. FRONT JACK C.B.A.

17.5. DVD MODULE C.B.A.

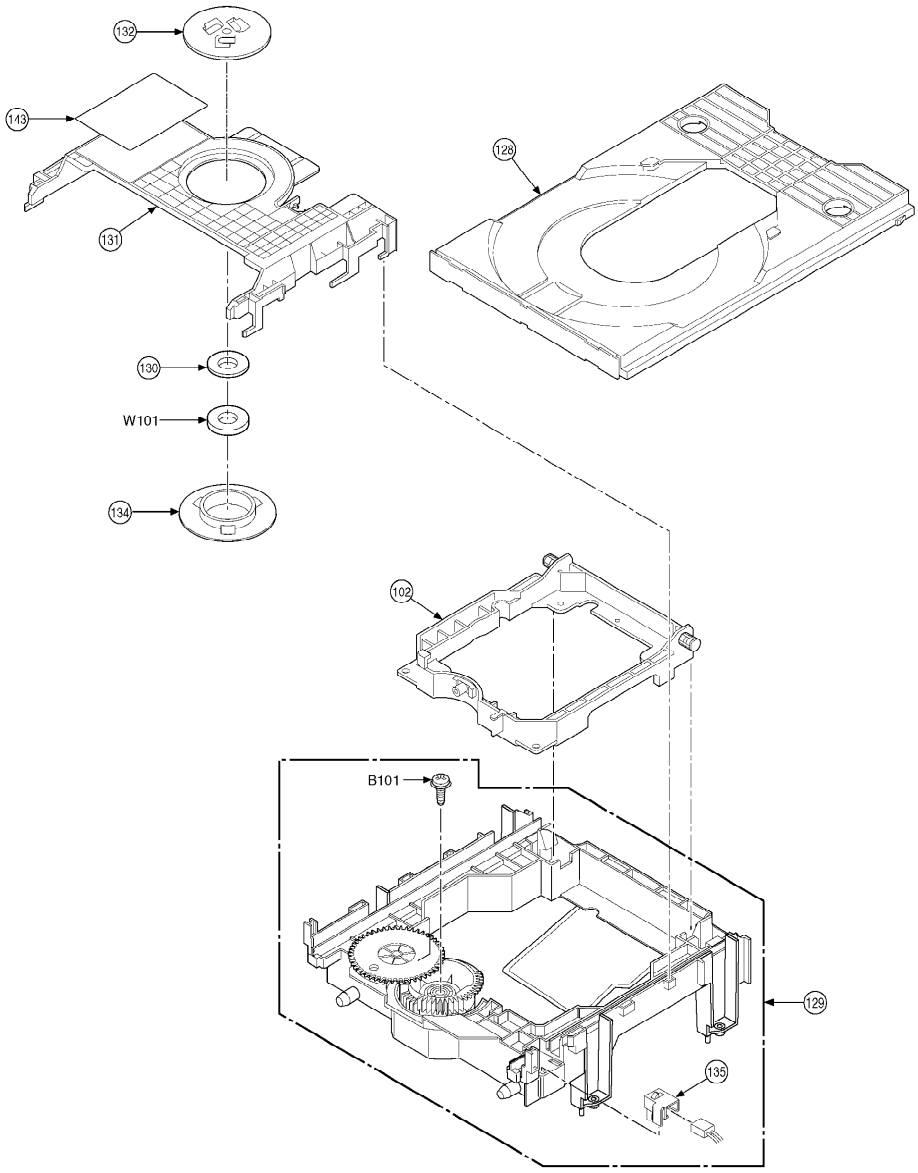
17.6. TRAVERSE C.B.A.

18. EXPLODED VIEWS

18.1. VCR MECHANISM CHASSIS PARTS SECTION



18.2. DVD MECHANISM CHASSIS PARTS SECTION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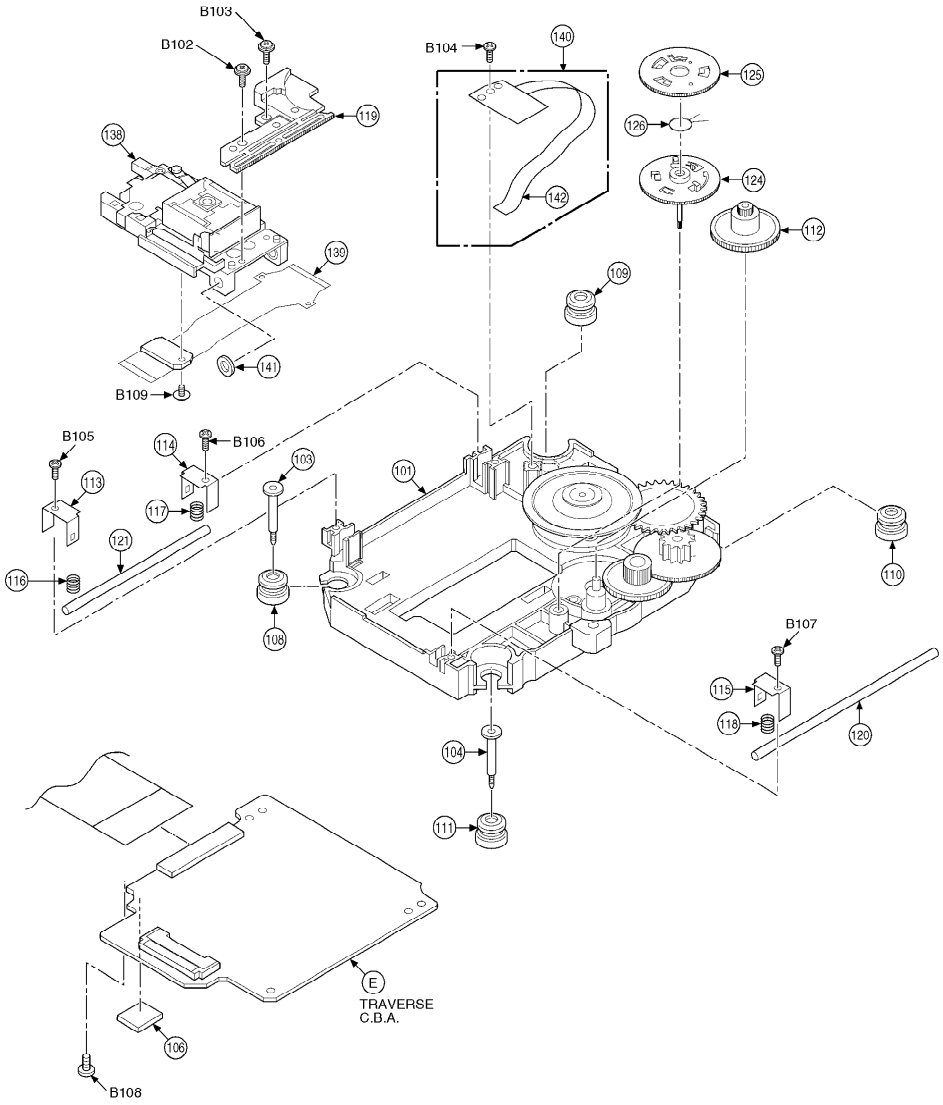
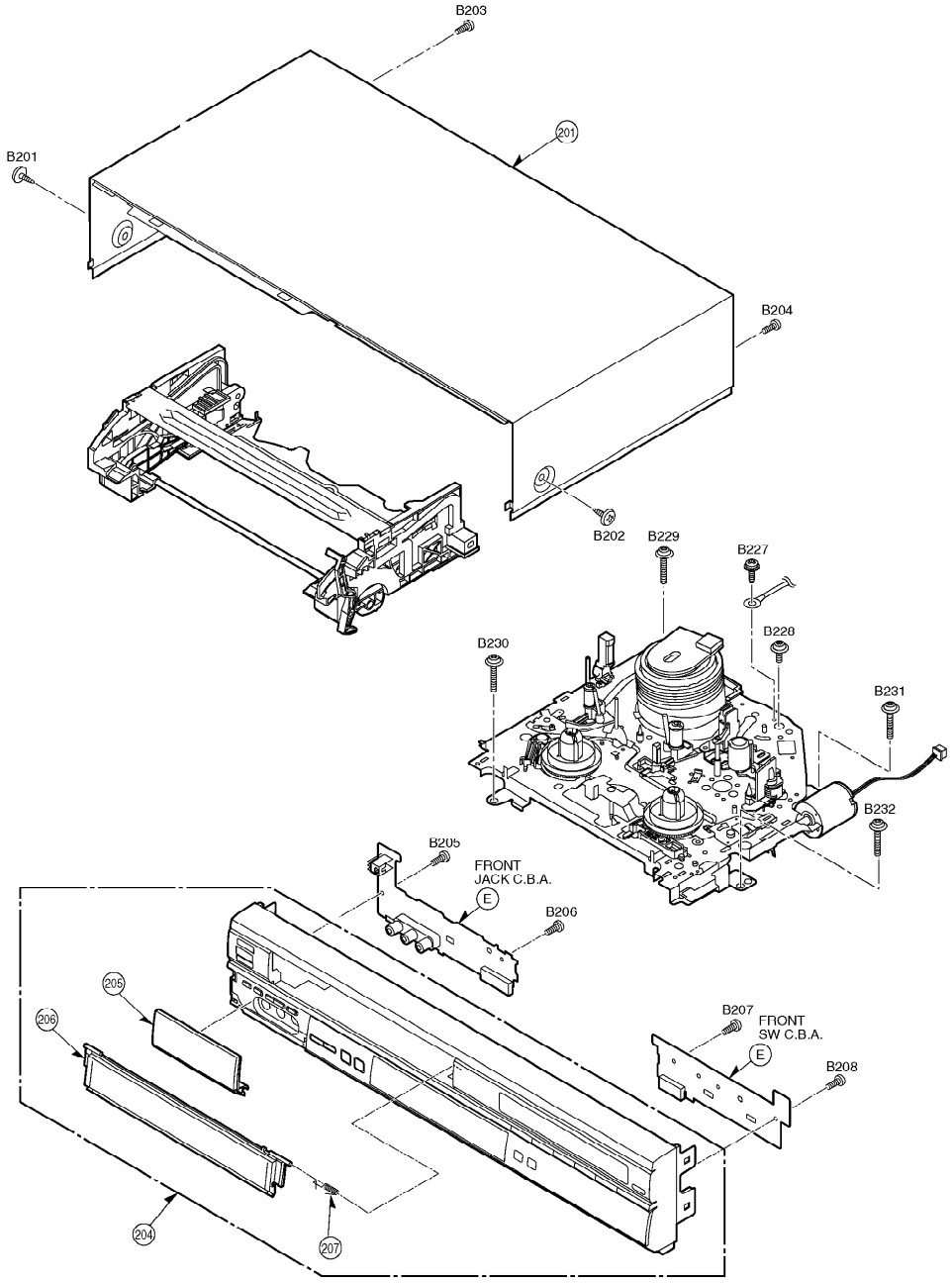
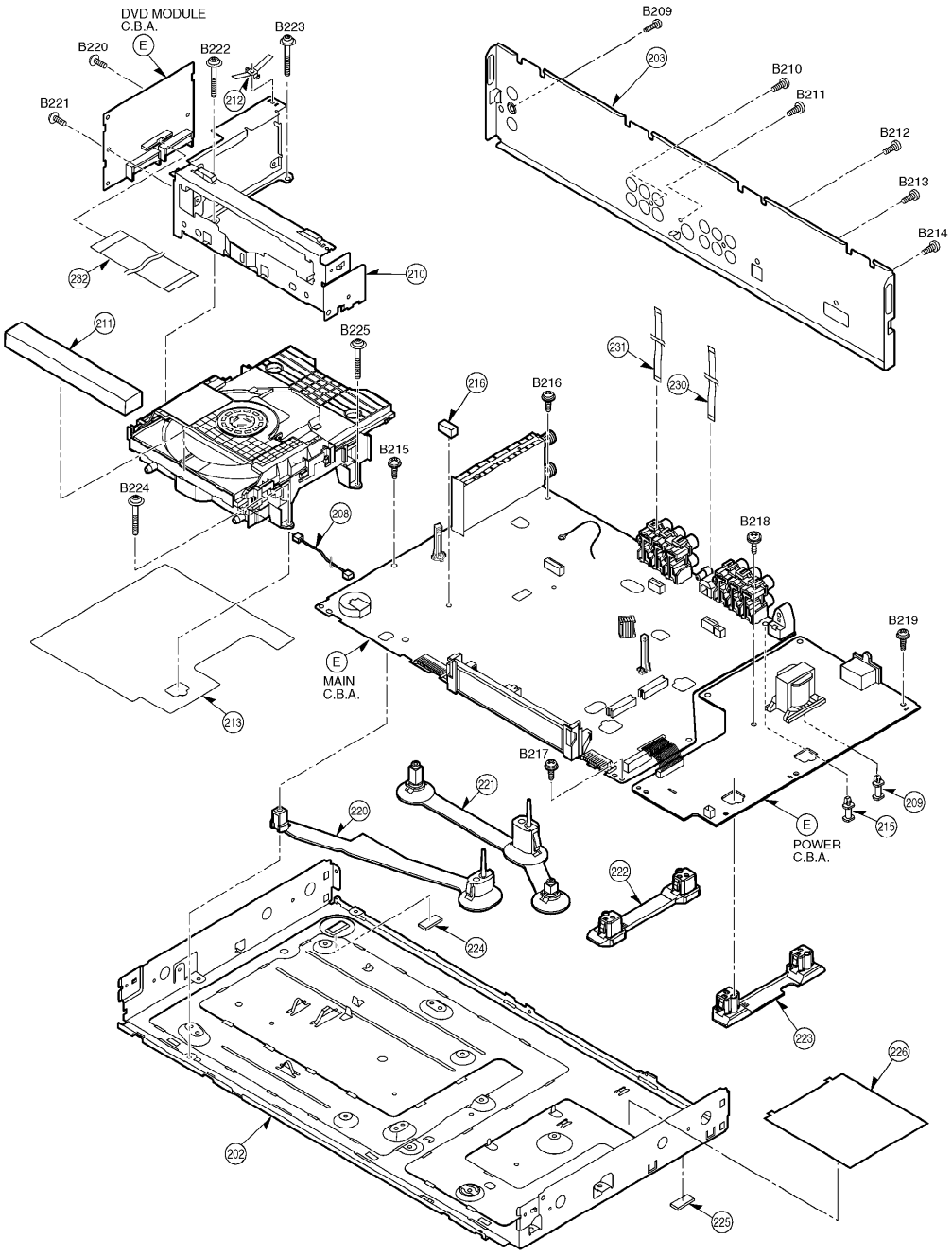
143
131
128
130
W101
134
102
B101
129
135

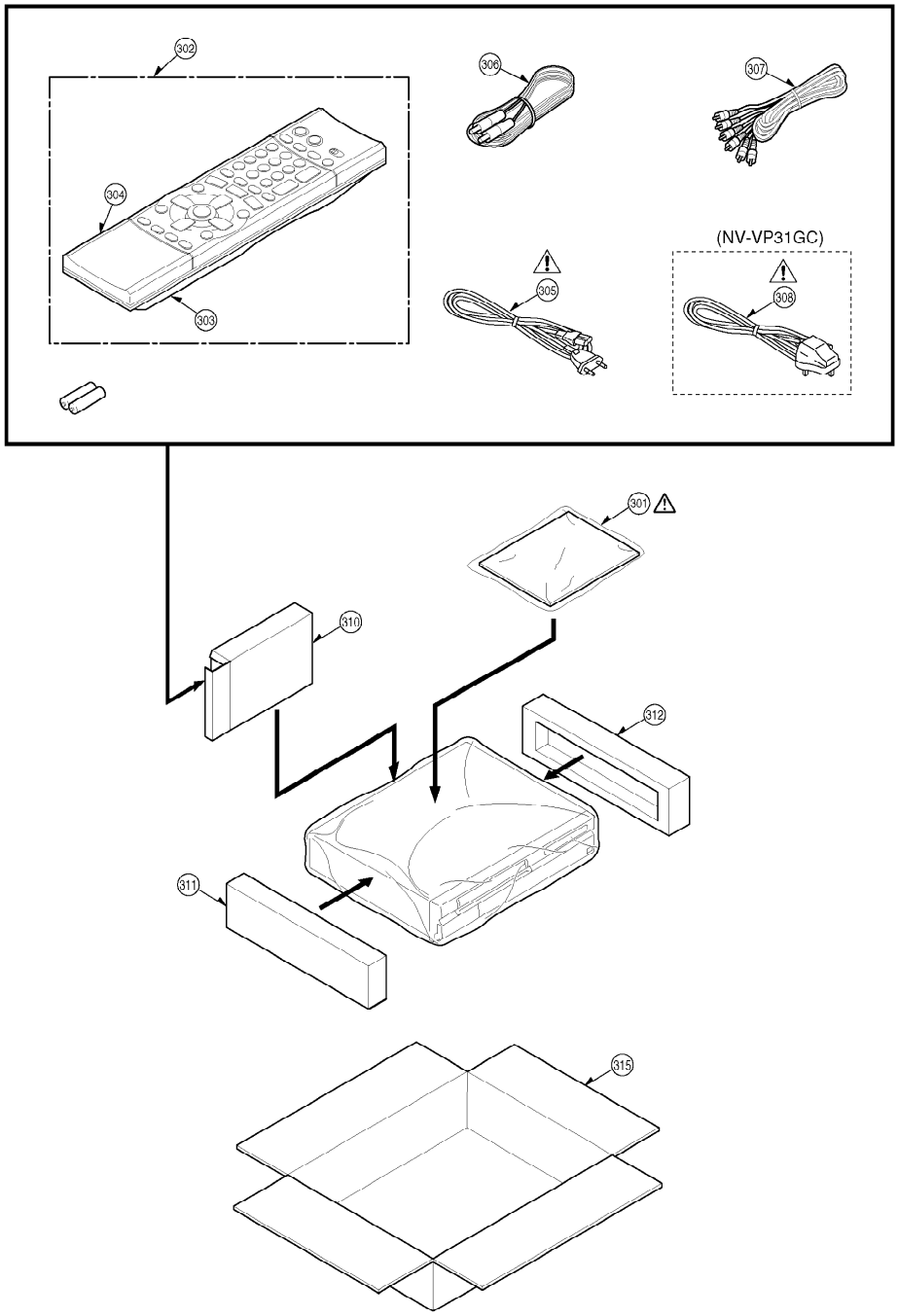


18.3. CASING PARTS SECTION


B203
201
B201
B204
B202
B229
B227
B228
B230
B231
B232
B205
FRONT
JACK C.B.A.
E
B206
205
206
B207
FRONT
SW C.B.A.
E
B208
204
207



18.4. PACKING PARTS SECTION



19. REPLACEMENT PARTS LIST

19.1. VCR MECHANISM CHASSIS PARTS SECTION PARTS LIST

Note:
***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied by PAVCJM.**
Parts mentioned [AVC-SPC] are supplied by AVC-SPC.

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
1	VEG1612-DKIT	CYLINDER UNIT	
2	VEM0750	CAPSTAN UNIT	
3	L1AZ00000004	FE HEAD UNIT	
4	VDG1510	INTERMEDIATE GEAR	
5	VDG1511	MAIN CAM GEAR	
6	VDG1512	IDLER GEAR	
7	VDG1512	IDLER GEAR	
8	VDG1514	CHANGE GEAR	
9	VDR0372	REEL TABLE	
10	VDR0372	REEL TABLE	
11	VDV0391	CAPSTAN BELT	
12	VMB3550	CHANGE GEAR SPRING	
14	VMD4252	OPENER PIECE	
15	VMD4253	LED PRISM	
17	VML3624	MAIN LEVER	
18	VML3626	PINCH CHARGE ARM	
19	VML3632	IDLER ARM	
20	VMX3092	P4 CAP	
21	VDB1431	TENSION ARM BOSH	
22	VEM0797	LOADING MOTOR UNIT	
23	VXA7105	SUPPLY SHAFT HOLDER UNIT	
24	VXA7106	TAKE UP SHAFT HOLDER UNIT	
25	L1AE00000036	AC HEAD UNIT	
26	VXA7311	SECTOR GEAR UNIT	
27	VXL3107	SUPPLY LOADING ARM UNIT	
28	VXL3108	TAKE UP LOADING ARM UNIT	
29	VXL3109	PINCH ARM UNIT	
30	VXL3110	P5 ARM UNIT	
31	VXL3111	TENSION ARM UNIT	
32	VMB3547	TENSION SPRING	
33	VXL3112	SUPPLY BRAKE ARM UNIT	
34	VXL3113	TAKE UP BRAKE ARM UNIT	
35	VMB3548	TAKE UP BRAKE SPRING	
36	VXL3124	CHANGE LEVER UNIT	
37	VXL3131	CLEANER ARM UNIT	
39	VXP2133	CENTRE CLUTCH UNIT	
40	VXP2168	TORQUE CLUTCH UNIT	
41	VMD4770	FLAT CABLE HOLDER	
50	VMA0L25	TOP PLATE	
51	VMD4255	SIDE PLATE (L)	
52	VMD4254	SIDE PLATE (R) UNIT	
53	VML3706	OPENER LEVER	
54	VXA7110	CASSETTE HOLDER UNIT	
55	VXL3160	MAIN SHAFT UNIT	
B1	VHD1044	SCREW	
B2	XSN3+35	SCREW	
B3	XTN26+7J	SCREW	
B4	XTN26+7J	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
B5	XTN26+7J	SCREW	
B6	XTV26+5F	SCREW	
B7	XTV26+5F	SCREW	
B8	XTV26+8FR	SCREW	
B9	XTV26+8FR	SCREW	
B10	VHD1066	SCREW	
B11	VHD1066	SCREW	
B12	VHD1185	SCREW	
B13	VHD1095	SCREW	
B14	VHD1117	SCREW	
B15	VHD1117	SCREW	
W1	VMX2208	WASHER	
W2	VMX3114	WASHER	
W3	VMX2699	WASHER	
W4	VMX3196	WASHER	

19.2. DVD MECHANISM CHASSIS SECTION PARTS LIST

Note:

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Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
101	RXQ1016A	SPINDLE MOTOR ASS'Y	
102	RMR1323-K3	MIDDLE CHASSIS	
103	RMS0712	FIXED PIN	
104	RMS0712	FIXED PIN	
106	RMGC0558-K	CBA RUBBER	
108	RMG0545-A1	FLOATING RUBBER	
109	RMG0545-A1	FLOATING RUBBER	
110	RMG0545-A1	FLOATING RUBBER	
111	RMG0545-A1	FLOATING RUBBER	
112	RDG0499	TRV GEAR(A)	
113	RMC0415	ADJUST SP. HOLDER(A)	
114	RMC0415	ADJUST SP. HOLDER(A)	
115	RMC0415	ADJUST SP. HOLDER(A)	
116	RMEC0320	ADJUST SPRING	
117	RMEC0320	ADJUST SPRING	
118	RMEC0320	ADJUST SPRING	
119	RMM0251	TRV DRIVE TRACK	
120	RMSC0710	DRIVE SHAFT	
121	RMSC0711	GUIDE SHAFT	
124	RDG0500	TRV GEAR(B)	
125	RDG0501	TRV GEAR(C)	
126	RMEC0319	TRV GEAR SPRING	
128	RGQ0280-K4	TRAY	

Ref. No.	Part No.	Part Name & Description	Remarks
129	RXQ0748	MECHA CHASSIS UNIT	
130	JSMC0048	MAGNET HOLDER	
131	RMR1445-K	CLAMP PLATE	
132	RMR1447-X	MAGNET HOLDER	
134	RMR1446-X	CLAMPER	
135	RSH1A049-U	OPEN SW	
138	RAF3023A	OPU(4.16H)	
139	NL6482-15	OPU FPC	
140	REP3383A	FG UNIT	
141	RMG0561-T	CUSHION RUBBER	
142	RJB2588A	FG FPC	
143	RQLXS0054	LASER CAUTION LABEL	
B101	XTW3+12S	SCREW	
B102	RHD17045	SCREW	
B103	RHD17045	SCREW	
B104	RHD14095	SCREW	
B105	VHD1224-C	SCREW	
B106	VHD1224-C	SCREW	
B107	VHD1224-C	SCREW	
B108	RHD20060	SCREW	
B109	XTN2+6G-C	SCREW	
W101	XWG6FFY	WASHER	

19.3. CASING PARTS SECTION PARTS LIST

Note:

***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied by PAVCJM. Parts mentioned [AVC-SPC] are supplied by AVC-SPC.**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
201	VGM2051	TOP PANEL	⚠
202	VMP7767	CHASSIS FRAME	
203	VMP7785	BACK PANEL	
204	VYP8848	FRONT PANEL UNIT	
205	VYF2987	DOOR UNIT	
206	VKF3810	BLINDER PANEL	
207	VMB2521	BLINDER SPRING	
208	VEE0S80-N	WIRE CABLE (2P)	
209	RMN0091	SPACER	
210	VMP7768	FRONT ANGLE	
211	VGK2969	TRAY ORNAMENT	
212	VMC1887	EARTH SPRING	
213	VMZ3392	BARRIER (DVD)	
215	VKC0295	CBA SPACER	
216	VMX3277	SPACER	
220	VMX3115	MECHA SPACER (F)	
221	VMX3229	MECHA SPACER (R)	
222	VMX3230	DVD SPACER (L)	
223	VMX3231	DVD SPACER (R)	
224	VKA0364	FOOT	
225	VKA0364	FOOT	
226	VMZ3402	BARRIER (FRAME)	
230	VWJ1678	FLAT CARD CABLE (7P)	P2501-CYLINDER
231	VWJ1605	FLAT CARD CABLE (6P)	P4002-AC HEAD
232	VWJ1677	FLAT CARD CABLE (50P)	FP5201-FP5102
B201	VHD1094	SCREW TOP	
B202	VHD1094	SCREW TOP	
B203	VHD0690	SCREW (REAR P)	
B204	VHD0690	SCREW (REAR P)	
B205	XTBS26+10J	SCREW	
B206	XTBS26+10J	SCREW	
B207	XTBS26+10J	SCREW	
B208	XTBS26+10J	SCREW	
B209	XSN3+4FZ	SCREW (TUNER)	
B210	VHD0690	SCREW (REAR P)	
B211	VHD0690	SCREW (REAR P)	
B212	VHD0690	SCREW (REAR P)	
B213	VHD0690	SCREW (REAR P)	
B214	VHD0690	SCREW (REAR P)	
B215	RHD30090	SCREW (PCB)	
B216	RHD30090	SCREW (PCB)	
B217	RHD30090	SCREW (PCB)	
B218	RHD30090	SCREW (PCB)	
B219	RHD30090	SCREW (PCB)	
B220	RHD30090	SCREW (PCB)	
B221	RHD30090	SCREW (PCB)	
B222	VHD1633	SCREW (DL1)	
B223	VHD1633	SCREW (DL1)	
B224	VHD1633	SCREW (DL1)	
B225	VHD1633	SCREW (DL1)	
B227	XTV26+5FR	SCREW (EARTH)	

Ref. No.	Part No.	Part Name & Description	Remarks
B228	XTW3+10PR	SCREW (MECHA)	
B229	VHD1452	SCREW(L)	
B230	VHD1453	SCREW(S)	
B231	VHD1453	SCREW(S)	
B232	VHD1453	SCREW(S)	

19.4. PACKING PARTS SECTION PARTS LIST

Note:
***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied by PAVCJM. Parts mentioned [AVC-SPC] are supplied by AVC-SPC.**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
301	VQT0F32	O/I BOOK (ENGLISH/ARABIC)	⚠ NV-VP31GC/GCS
301	VQT0F31	O/I BOOK (ENGLISH)	⚠ NV-VP31GL
302	EUR7615LD0	REMOTE CONTROL	
303	UR76EC1503A	BATTERY COVER	
304	UR76DR1504AA	DOOR PANEL	
305	RJA0019-2X	AC CABLE	⚠ NV-VP31GC/GCS
305	RJA0035-2X	AC CABLE	⚠ NV-VP31GL
306	VJA1124	RF CABLE	
307	K2KA6BA00003	PHONO CABLE	
308	RJA0053-3X	AC CABLE	⚠ NV-VP31GC
310	RPKV0001	ACCESSORY BOX	
311	VPN6084	CUSHION (L)	
312	VPN6085	CUSHION (R)	
315	VPG0V18	PACKING CASE	NV-VP31GC
315	VPG0V19	PACKING CASE	NV-VP31GCS
315	VPG0V16	PACKING CASE	NV-VP31GL
		SERVICE FIXTURES & TOOLS	
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	[AVC-SPC]
	VFK0335	RETAINING RING REMOVER (3mm/4mm)	[AVC-SPC]
	VFK0329	POST ADJUSTMENT SCREWDRIVER	[AVC-SPC]
	VFK0326	HEX WRENCH SET	[AVC-SPC]
	VFK0132	BACK TENSION METER	[AVC-SPC]
	VFK27	HEAD CLEANING STICK	[AVC-SPC]
	VFK1024	MOLYTONE GREASE	[AVC-SPC]
	VFK0330	FINE ADJUSTMENT GEAR DRIVER	[AVC-SPC]
	VFK1301	SILICONE GREASE	[AVC-SPC]
	VFK1298A	FLOIL GREASE	[AVC-SPC]
	VFK1728	EXTENSION CABLE(19P)	[AVC-SPC]
	VFK1733	FLAT CABLE(50P)	[AVC-SPC]
	VFK1852	EXTENSION CABLE(18P)	[AVC-SPC]

19.5. ELECTRICAL PARTS LIST

Note1:
In Main C.B.A, DVD Module C.B.A, and Traverse C.B.A., some parts might be using the same ref no. Therefore, kindly be sure to place your order of replacement parts according to the desired C.B.A. respectively.
e.g.)

Ref No.	Part No.	Part Name	C.B.A.
C2001	ECJ1VC1H330J	CHIP CAPACITOR	MAIN C.B.A.
C2001	F2G0J1010013	SMT FLAP	DVD MODULE C.B.A.

Note2:
All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied by PAVCJM. Parts mentioned [AVC-SPC] are supplied by AVC-SPC.

Note3:
"*1", "2", "3" in the Remarks column shows the models as follow.
"*1" : NV-VP31GC-S
"*2" : NV-VP31GCS-S
"*3" : NV-VP31GL-S

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "▮" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

Ref. No.	Part No.	Part Name & Description	Remarks
	VEP06F49C	MAIN C.B.A	(RTL) *1
	VEP06F49D	MAIN C.B.A	(RTL) *2
	VEP06F49A	MAIN C.B.A	(RTL) *3
	VEP01940A	POWER C.B.A	(RTL)
	VEP04849A	FRONT JACK C.B.A	(RTL)
	VEP06F50A	FRONT SW C.B.A	(RTL)
	REP3597B	DVD MODULE C.B.A	(RTL)
	REP3406A-1N	TRAVERSE C.B.A.	(RTL)
	REP3383A	FG UNIT	(RTL)
	VEP06F49C	MAIN C.B.A	(RTL) *1
	VEP06F49D	MAIN C.B.A	(RTL) *2
	VEP06F49A	MAIN C.B.A	(RTL) *3
B7751	VSB0205	BATTERY	
C1341	ECJ1VF1H103Z	CHIP CAPACITOR	
C1342	F2A1H4R7A234	E-CAP	
C1351	ECJ1VF1H103Z	CHIP CAPACITOR	
C1352	ECEA1AKA470B	E-CAP	
C2001	ECJ1VC1H330J	CHIP CAPACITOR	
C2003	ECJ1VF1A105Z	CHIP CAPACITOR	
C2051	ECEA0JKN220B	E-CAP	
C2053	F2A1V100A184	E-CAP	
C2054	ECJ1VB1H392K	CHIP CAPACITOR	
C2055	ECJ1VF1C104Z	CHIP CAPACITOR	
C2099	ECJ1VC1H681J	CHIP CAPACITOR	
C2501	ECJ1VF1C104Z	CHIP CAPACITOR	
C2502	ECEA0JKA221B	E-CAP	
C2504	ECJ1VB1E223K	CHIP CAPACITOR	
C2505	ECJ1VB1E223K	CHIP CAPACITOR	
C2506	F1H1A224A025	CHIP CAPACITOR	
C2507	ECJ1VB1H102K	CHIP CAPACITOR	
C2508	ECJ1VB1H182K	CHIP CAPACITOR	
C2509	F2A1C220A234	E CAP	
C2510	F1H1C104A065	CHIP CAPACITOR	
C2511	F1H1C104A065	CHIP CAPACITOR	
C2512	F1H1C104A065	CHIP CAPACITOR	
C2513	ECJ1VF1A105Z	CHIP CAPACITOR	
C2515	ECJ1VF1H103Z	CHIP CAPACITOR	
C2518	ECJ1VB1H102K	CHIP CAPACITOR	
C2519	ECJ1VF1H103Z	CHIP CAPACITOR	
C2520	F1H1C104A065	CHIP CAPACITOR	
C2551	ECJ1VB1C563K	CHIP CAPACITOR	
C2552	ECJ1VB1C563K	CHIP CAPACITOR	

Ref. No.	Part No.	Part Name & Description	Remarks
C2561	ECJ1VB1C563K	CHIP CAPACITOR	
C2562	ECJ1VB1C563K	CHIP CAPACITOR	
C2571	ECA1EM221B	E-CAP	
C3002	F1H1C104A065	CHIP CAPACITOR	
C3003	F1H1C104A065	CHIP CAPACITOR	
C3004	ECJ1VC1H151J	CHIP CAPACITOR	
C3005	F1H1C104A065	CHIP CAPACITOR	
C3006	F1H0J1050013	CHIP CAPACITOR	
C3007	ECJ1VC1H390J	CHIP CAPACITOR	
C3008	F2A1H4R7A234	E-CAP	
C3009	F1H0J1050013	CHIP CAPACITOR	
C3010	F1H0J1050013	CHIP CAPACITOR	
C3011	F2A0J470A245	E-CAP	
C3012	F1H1C104A065	CHIP CAPACITOR	
C3013	F1H1C104A065	CHIP CAPACITOR	
C3015	F1H1C104A065	CHIP CAPACITOR	
C3016	F1H0J1050013	CHIP CAPACITOR	
C3017	F1H1C104A065	CHIP CAPACITOR	
C3019	F1H1C104A065	CHIP CAPACITOR	
C3020	F2A1H3R3A234	E CAP	
C3021	F2A1V100A184	E-CAP	
C3022	ECJ1VB1H103K	CHIP CAPACITOR	
C3025	ECJ1VC1H331J	CHIP CAPACITOR	
C3027	ECJ2VB1H103K	CHIP CAPACITOR	
C3028	F2A0J470A245	E-CAP	
C3029	ECJ1VF1H103Z	CHIP CAPACITOR	
C3030	ECJ1VF1H103Z	CHIP CAPACITOR	
C3031	F1H1C104A065	CHIP CAPACITOR	
C3032	F2A0J470A245	E-CAP	
C3033	F1H0J1050013	CHIP CAPACITOR	
C3034	ECJ1VC1H020C	CHIP CAPACITOR	
C3035	F1H1C104A065	CHIP CAPACITOR	
C3036	F2A1H3R3A234	E CAP	
C3037	F2A1H2R2A234	E CAP	
C3038	ECJ1VB1H472K	CHIP CAPACITOR	
C3039	ECJ1VB1C333K	CHIP CAPACITOR	
C3040	F1H1A474A025	CHIP CAPACITOR	
C3041	ECJ1VB1E223K	CHIP CAPACITOR	
C3042	F2A1H4R7A234	E-CAP	
C3046	F1H0J1050013	CHIP CAPACITOR	*1,*2
C3047	ECJ2VF1H104Z	CHIP CAPACITOR	
C3052	F1H1C104A065	CHIP CAPACITOR	
C3053	F1H1C104A065	CHIP CAPACITOR	
C3062	F2A1V100A184	E-CAP	
C3064	F1H0J1050013	CHIP CAPACITOR	
C3065	F1H1C104A065	CHIP CAPACITOR	
C3066	F1H1C104A065	CHIP CAPACITOR	
C3712	F1H1C104A065	CHIP CAPACITOR	
C3713	ECJ1VB1C104K	CHIP CAPACITOR	
C3714	ECJ1VB1H103K	CHIP CAPACITOR	
C3715	ECA0JM471B	E-CAP	
C3716	F1H1C104A065	CHIP CAPACITOR	
C4010	F2A1V100A184	E-CAP	
C4018	F2A0J220A245	E-CAP	

Ref. No.	Part No.	Part Name & Description	Remarks
C4041	F2A1H4R7A234	E-CAP	
C4042	F2A1H4R7A234	E-CAP	
C4052	F1H1C104A065	CHIP CAPACITOR	
C4061	ECJ1VB1H103K	CHIP CAPACITOR	
C4062	F2A0J330A245	E-CAP	
C4063	F2A1H3R3A234	E CAP	
C4064	ECJ1VB1H182K	CHIP CAPACITOR	
C4065	ECJ1VB1H182K	CHIP CAPACITOR	
C4066	F1H1H222A219	CHIP CAPACITOR	
C4081	ECQB1H223JF3	POLYSTER CAPACITOR	⚠
C4082	ECJ1VB1H471K	CHIP CAPACITOR	
C4083	F2A0J470A245	E-CAP	
C4084	ECJ1VB1H182K	CHIP CAPACITOR	
C4085	ECJ1VB1E223K	CHIP CAPACITOR	
C4303	ECEA1HKAR22B	ELECTROLYTIC CAPACITOR	
C4304	ECEA1HKAR22B	ELECTROLYTIC CAPACITOR	
C4502	F2A1V100A184	E-CAP	
C4503	F2A1V100A184	E-CAP	
C4504	F2A1V100A184	E-CAP	
C4505	F2A0J330A245	E-CAP	
C4506	F2A1V100A184	E-CAP	
C4507	F2A0J220A245	E-CAP	
C4508	ECJ1VB1C333K	CHIP CAPACITOR	
C4509	ECJ1VF1H103Z	CHIP CAPACITOR	
C4510	ECJ1VF1H103Z	CHIP CAPACITOR	
C4511	F1H1C104A065	CHIP CAPACITOR	
C4512	F1H1A224A025	CHIP CAPACITOR	
C4513	F2A0J220A245	E-CAP	
C4514	F2A1V100A184	E-CAP	
C4515	F2A0J330A245	E-CAP	
C4516	F2A1V100A184	E-CAP	
C4517	F2A0J220A245	E-CAP	
C4519	F2A1V100A184	E-CAP	
C4520	F2A1V100A184	E-CAP	
C4521	F2A1V100A184	E-CAP	
C4522	F2A0J220A245	E-CAP	
C4524	F1H1C104A065	CHIP CAPACITOR	
C4525	F2A1C220A234	E CAP	
C4527	F2A1V100A184	E-CAP	
C4530	ECJ1VC1H151J	CHIP CAPACITOR	
C4531	ECJ1VC1H151J	CHIP CAPACITOR	
C4534	ECQB1H153JF3	POLYPROPYLEN CAPACITOR	
C4535	ECQB1H153JF3	POLYPROPYLEN CAPACITOR	
C4536	ECJ1VF1H103Z	CHIP CAPACITOR	
C4537	ECJ2VC1H560G	CHIP CAPACITOR	
C4538	ECJ1VF1H103Z	CHIP CAPACITOR	
C4581	ECQB1H473JF3	POLYESTER CAPACITOR	
C4582	ECQB1H473JF3	POLYESTER CAPACITOR	
C4601	F2A1V100A184	E-CAP	
C4603	ECJ1VB1H152K	CHIP CAPACITOR	
C5001	ECJ1VB1H103K	CHIP CAPACITOR	
C5002	ECJ1VB1H103K	CHIP CAPACITOR	
C5003	ECJ1VB1H103K	CHIP CAPACITOR	
C5004	ECJ1VB1H103K	CHIP CAPACITOR	

[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Remarks
C5005	ECEA0JKA101B	E-CAP	
C5006	F1H1C104A065	CHIP CAPACITOR	
C6001	ECJ1VC1H180J	CHIP CAPACITOR	
C6002	ECJ1VC1H220J	CHIP CAPACITOR	
C6003	ECJ1VC1H180J	CHIP CAPACITOR	
C6004	ECJ1VC1H180J	CHIP CAPACITOR	
C6005	F2A1H3R3A234	E CAP	
C6006	ECJ1VC1H101J	CHIP CAPACITOR	
C6007	ECJ1VC1H820J	CHIP CAPACITOR	
C6008	ECJ1VC1H471J	CHIP CAPACITOR	
C6009	ECJ1VF1H103Z	CHIP CAPACITOR	
C6010	ECJ1VF1H103Z	CHIP CAPACITOR	
C6011	ECJ1VF1H103Z	CHIP CAPACITOR	
C6013	ECJ1VF1A105Z	CHIP CAPACITOR	
C6014	ECJ1VB1H102K	CHIP CAPACITOR	
C6015	ECJ1VB1C333K	CHIP CAPACITOR	
C6016	ECJ1VB1H102K	CHIP CAPACITOR	
C6017	ECJ1VC1H471J	CHIP CAPACITOR	
C6019	ECJ1VF1H103Z	CHIP CAPACITOR	
C6020	ECJ1VB1H102K	CHIP CAPACITOR	
C6021	ECJ1VF1H103Z	CHIP CAPACITOR	
C6022	ECJ2VF1H103Z	CHIP CAPACITOR	
C6101	ECJ2VF1H104Z	CHIP CAPACITOR	
C6102	ECJ1VF1H103Z	CHIP CAPACITOR	
C6103	ECJ1VF1H103Z	CHIP CAPACITOR	
C6111	ECJ1VF1C104Z	CHIP CAPACITOR	
C6112	ECJ1VC1H120J	CHIP CAPACITOR	
C6113	ECJ1VC1H120J	CHIP CAPACITOR	
C6301	ECJ1VF1H103Z	CHIP CAPACITOR	
C6302	ECJ1VF1H103Z	CHIP CAPACITOR	
C6303	ECEA1AKA470B	E-CAP	
C6307	ECJ1VF1H103Z	CHIP CAPACITOR	
C6308	F2A0J470A245	E-CAP	
C6309	ECEA1AKA470B	E-CAP	
C6310	ECJ1VF1H103Z	CHIP CAPACITOR	
C7301	F1H1H103A730	CHIP CAPACITOR	*3
C7303	ECEA0JKA101B	E-CAP	*3
C7304	ECJ1VF1C104Z	CHIP CAPACITOR	*3
C7305	ECEA0JKA101B	E-CAP	*3
C7312	F2A1V100A184	E-CAP	*3
C7313	F2A1V100A184	E-CAP	*3
C7315	F1H1A474A025	CHIP CAPACITOR	*3
C7316	ECJ1VB1H472K	CHIP CAPACITOR	*3
C7317	ECEA1CKA470B	E-CAP	*3
C7318	ECEA1CKA100B	E-CAP	*3
C7319	ECJ1VB1H152K	CHIP CAPACITOR	*3
C7320	ECJ1VB1H152K	CHIP CAPACITOR	*3
C7321	ECJ1VB1H152K	CHIP CAPACITOR	*3
C7324	ECJ1VB1H103K	CHIP CAPACITOR	*3
C7325	ECJ1VB1H103K	CHIP CAPACITOR	*3
C7326	F1H1A474A025	CHIP CAPACITOR	*3
C7327	ECJ1VB1E123K	CHIP CAPACITOR	*3
C7328	ECJ1VC1H681J	CHIP CAPACITOR	*3
C7329	ERJ3GEY0R00V	CHIP JUMPER	*3

Ref. No.	Part No.	Part Name & Description	Remarks
C7330	ECJ1VC1H681J	CHIP CAPACITOR	*3
C7331	ECJ1VB1E123K	CHIP CAPACITOR	*3
C7333	F1H1A474A025	CHIP CAPACITOR	*3
C7335	ECJ1VF1C104Z	CHIP CAPACITOR	*3
C7336	F1H1C104A065	CHIP CAPACITOR	*3
C7337	F1H1A474A025	CHIP CAPACITOR	*3
C7338	F1H1A474A025	CHIP CAPACITOR	*3
C7601	ECEA1HKA010B	E-CAP	
C7603	ECJ1VF1H103Z	CHIP CAPACITOR	
C7605	ECEA0JKA470B	E-CAP	
C7608	ECJ1VF1H103Z	CHIP CAPACITOR	
C7610	ECJ1VB1H102K	CHIP CAPACITOR	
C7616	ECEA0JKA470B	E-CAP	
C7618	ECEA0JKA470B	E-CAP	
C7619	ECJ1VF1H103Z	CHIP CAPACITOR	
C7621	ECJ1VB1H471K	CHIP CAPACITOR	
C7622	ECJ1VB1H471K	CHIP CAPACITOR	
C7709	ECJ1VB1H182K	CHIP CAPACITOR	
C7714	ECJ1VC1H101J	CHIP CAPACITOR	*1,2
C7752	ECEA0JKA331Q	E-CAP	
C33001	ECJ1VF1H103Z	CHIP CAPACITOR	
C33014	F2A1A221A206	E CAP	
C33015	F2A1A221A206	E CAP	
C33017	ECJ1VF1H103Z	CHIP CAPACITOR	
C33501	F2A1A221A206	E CAP	
C33502	ECJ1VF1H103Z	CHIP CAPACITOR	
C33503	ECJ1VF1H103Z	CHIP CAPACITOR	
C33504	ECJ1VB1H103K	CHIP CAPACITOR	
C33505	F1H1C104A065	CHIP CAPACITOR	
C33506	F1H1C104A065	CHIP CAPACITOR	
C33507	F1H0J1050013	CHIP CAPACITOR	
C33508	F1H0J1050013	CHIP CAPACITOR	
C33509	F2A0J102A247	E-CAP	
C33510	ECEA0JKA101B	E-CAP	
C33511	F2A0J102A247	E-CAP	
C33512	ECEA0JKA101B	E-CAP	
C33513	F2A0J102A247	E-CAP	
C33514	ECEA0JKA101B	E-CAP	
C33515	ECA0JM331B	E-CAP	
C33517	ECA0JM331B	E-CAP	
C33522	F2A0J220A245	E-CAP	
C33531	ECJ1VB1H103K	CHIP CAPACITOR	
C34010	F2A1A221A206	E CAP	
C34012	ECJ1VF1H103Z	CHIP CAPACITOR	
C34013	F2A1H4R7A234	E-CAP	
C34015	F2A1H4R7A234	E-CAP	
C34371	F2A1H4R7A234	E-CAP	
C34405	ECJ1VB1H102K	CHIP CAPACITOR	
C34414	ECEA1CKA470B	E-CAP	
C34415	ECEA1CKA470B	E-CAP	
C34427	ECJ1VB1H102K	CHIP CAPACITOR	
C36001	F2A0J470A245	E-CAP	
C36003	ECJ1VF1C104Z	CHIP CAPACITOR	

Ref. No.	Part No.	Part Name & Description	Remarks
C36004	ECJ1VF1H104Z	CHIP CAPACITOR	
C36006	ECEA1VKA100B	E-CAP	
C36021	ECJ1VF1C104Z	CHIP CAPACITOR	
C36022	ECJ1VF1C104Z	CHIP CAPACITOR	
C36055	ECJ1VF1H103Z	CHIP CAPACITOR	
D1341	MAZ4130NLF	DIODE	
D1351	MAZ4056NHF	DIODE	
D1501	B3EA00000072	PHOTO DIODE	
D2001	MA2C165001VT	DIODE	
D2002	MA2C165001VT	DIODE	
D2503	MAZ4160NMF	DIODE	
D4501	MA2C165001VT	DIODE	
D6302	B0JACE000001	DIODE	
D6305	MAZ4062NLF	DIODE	
D6306	MAZ4056NHF	DIODE	
D6307	MAZ4056NHF	DIODE	
D7602	MAZ4300NMF	DIODE	
D7751	B0JACE000001	DIODE	
D7752	MA2C700A0F	DIODE	
D7753	MA2C165001VT	DIODE	
D7754	B0JACE000001	DIODE	
D33001	MAZ4056NHF	DIODE	
D34001	MAZ4075NHF	DIODE	
D34011	MA2C165001VT	DIODE	
D36001	MAZ4075NHF	DIODE	
D36002	MAZ4240NMF	DIODE	
DP37501	A2BB00000120	FIP DISPLAY	
IC1511	B3NAA0000049	REEL SENSOR	
IC1512	B3NAA0000049	REEL SENSOR	
IC2501	C1AB00001767	CYL DRIVE IC	
IC2502	C0DBZJG00005	REGULATOR IC	
IC3001	C1AB00001836	U-CON	
IC3703	C1AB00001192	SWITCHING IC	
IC4501	AN3656NFBPBV	HI FI IC	
IC6001	C2CBHF000292	U-CON	*1,*2
IC6001	C2CBHF000317	U-CON	*3
IC6003	C3EAEC000044	EEPROM FOR C2CBHF000292	*1,*2
IC6003	C3EAEC000046	EEPROM FOR C2CBHF000317	*3
IC6201	C0EBH0000172	RESET IC	
IC6301	C0DBCHD00002	REGULATOR IC	
IC7301	C0ZBZ0000580	IC	*3
IC33501	C9ZB00000431	DVD INTERFACE IC	
IC34372	K7AABA000001	OPTICAL MODULE	
IC36001	MN101C35DPH	OPECON IC	
IC36002	C0EBE0000198	RESET IC	
J1	VEE0U97	EARTH WIRE UNIT	
JK33001	K2HA609B0003	I/O JACK	

Ref. No.	Part No.	Part Name & Description	Remarks
JK34301	K2HA609B0004	I/O JACK	
JK34302	K2HZ105B0007	I/O JACK	
K4591	ERJ3GEY0R00V	CHIP JUMPER	*1,*2
K6012	ERJ3GEY0R00V	CHIP JUMPER	*3
K7306	ERJ3GEY0R00V	CHIP JUMPER	*3
L3001	G0C271JA0019	CHOKE COIL	
L3004	G1C120J00001	CHIP COIL	
L3301	G0C270JA0019	COIL	
L3302	G0C680JA0019	COIL	
L3303	G0C270JA0019	COIL	
L3701	G0C680JA0019	COIL	
L4081	G0C471KA0004	COIL	
L4501	G0C1R2J00004	COIL	
L4502	G0C391JA0019	COIL	
L5001	G0C680JA0019	COIL	
L6001	G0C5R6JA0019	COIL	
L7601	G0C100JA0030	COIL	
L7605	G0C100JA0030	COIL	
L7608	G0C270JA0030	COIL	
L7609	G0C100JA0030	COIL	
L7702	G0C100JA0019	COIL	*1,*2
L33501	G0C220JA0019	COIL	
L34001	G0C101JA0019	COIL	
L34371	G0C220JA0019	COIL	
LB4077	ERJ3GEY0R00V	CHIP JUMPER	
LB4078	ERJ3GEY0R00V	CHIP JUMPER	
LB4403	D0GDR00JA017	CHIP JUMPER	
LB4404	D0GDR00JA017	CHIP JUMPER	
LB4405	D0GDR00JA017	CHIP JUMPER	
LB4406	D0GDR00JA017	CHIP JUMPER	
LB7601	J0JBC0000015	CHIP COIL	
LB7605	ERJ3GEY0R00V	CHIP JUMPER	
LB33001	J0JCC0000188	CHIP COIL	
LB33002	ERJ3GEY0R00V	CHIP JUMPER	
LB33003	ERJ3GEY0R00V	CHIP JUMPER	
LB33004	ERJ3GEY0R00V	CHIP JUMPER	
LB33005	ERJ3GEY0R00V	CHIP JUMPER	
LB33006	J0JHC0000021	CHIP COIL	
LB33007	ERJ3GEY0R00V	CHIP JUMPER	
LB33008	ERJ3GEY0R00V	CHIP JUMPER	
LB33009	ERJ3GEY0R00V	CHIP JUMPER	
LB33010	J0JCC0000188	CHIP COIL	
LB33011	J0JCC0000188	CHIP COIL	
LB33012	J0JCC0000188	CHIP COIL	
LB33013	J0JCC0000188	CHIP COIL	
LB33014	ERJ3GEYJ332V	CHIP RESISTOR	
LB33374	ERJ3GEY0R00V	CHIP JUMPER	
LB33375	ERJ3GEY0R00V	CHIP JUMPER	
LB33535	ERJ3GEY0R00V	CHIP JUMPER	

Ref. No.	Part No.	Part Name & Description	Remarks
LB33571	ERJ3GEY0R00V	CHIP JUMPER	
LB33572	ERJ3GEY0R00V	CHIP JUMPER	
LB33573	ERJ3GEY0R00V	CHIP JUMPER	
LB34001	J0JBC0000011	CHIP COIL	
LB34002	ERJ3GEY0R00V	CHIP JUMPER	
LB34003	J0JCC0000124	CHIP COIL	
LB34371	ERJ3GEY0R00V	CHIP JUMPER	
LB34372	ERJ3GEY0R00V	CHIP JUMPER	
P1531	K1KA02A00375	LOADING MOTOR WIRE CONNECTOR	
P2501	K1MN07A00020	CONNECTOR	
P2571	K1KA08A00290	CONNECTOR	
P4001	K1MZ02A00003	CONNECTOR	
P4002	VJS3538A006W	6 PIN CONNECTOR	
P5001	K1MN10A00036	CONNECTOR	
P30003	K1KB18A00040	CONNECTOR	
P30004	K1KB18A00040	CONNECTOR	
P31001	K1KB19A00008	CONNECTOR	
PS7502	K1KB06A00051	CONNECTOR	
PS33001	K1KB10A00065	CONNECTOR	
Q1341	B1AAGD000006	TRANSISTOR	
Q1342	2SD0601A0L	CHIP TRANSISTOR	
Q1351	B1AAGD000006	TRANSISTOR	
Q1352	B1AAGD000006	TRANSISTOR	
Q1354	B1AAGD000006	TRANSISTOR	
Q1501	PNA2604M01VT	PHOTO TRANSISTOR	
Q1502	PNA2604M01VT	PHOTO TRANSISTOR	
Q3001	2SD1819A0L	TRANSISTOR	
Q3003	2SD1819A0L	TRANSISTOR	
Q3702	2SB1218A0L	TRANSISTOR	
Q4081	2SD0602ARL	CHIP TRANSISTOR	
Q4082	2SD114900L	CHIP TRANSISTOR	
Q4083	2SD0601A0L	CHIP TRANSISTOR	
Q4084	2SB0710A0L	CHIP TRANSISTOR SI 220MH 0.4W	
Q6305	2SD0601A0L	CHIP TRANSISTOR	
Q6306	2SD0601A0L	CHIP TRANSISTOR	
Q6307	B1AAGD000006	TRANSISTOR	
Q7701	2SB0709A0L	CHIP TRANSISTOR	*1,*2
Q33001	B1AAGD000006	TRANSISTOR	
Q33011	2SC3940A0A	TRANSISTOR SI 10MH 30W	
Q34003	2SD0601A0L	CHIP TRANSISTOR	
Q34004	2SB0709A0L	CHIP TRANSISTOR	
QR1342	UNR211200L	DIGITAL TRANSISTOR	
QR3001	UNR221300L	DIGITAL TRANSISTOR	
QR3004	UNR221300L	DIGITAL TRANSISTOR	
QR3008	UNR221300L	DIGITAL TRANSISTOR	
QR4061	UNR221100L	DIGITAL TRANSISTOR	
QR4081	UNR211100L	CHIP TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
QR4082	UNR221300L	DIGITAL TRANSISTOR	
QR4401	UNR521600L	DIGITAL TRANSISTOR	
QR4404	UNR511300L	DIGITAL TRANSISTOR	
QR4405	UNR521600L	DIGITAL TRANSISTOR	
QR4406	UNR521600L	DIGITAL TRANSISTOR	
QR4651	UNR521600L	DIGITAL TRANSISTOR	
QR33001	UNR521200L	DIGITAL TRANSISTOR	
QR34410	UNR521500L	DIGITAL TRANSISTOR	
QR34419	UNR521500L	DIGITAL TRANSISTOR	
QR36001	UNR521200L	DIGITAL TRANSISTOR	
QR36002	UNR521200L	DIGITAL TRANSISTOR	
QR36007	UNR521100L	DIGITAL TRANSISTOR	
QR36008	UNR521100L	DIGITAL TRANSISTOR	
R1341	ERDS2TJ103T	CARBON RESISTOR	
R1342	ERJ3GEYJ104V	CHIP RESISTOR	
R1351	ERDS2TJ471T	CARBON RESISTOR	
R1501	ERJ3GEYJ273V	CHIP RESISTOR	
R1502	ERJ3GEYJ273V	CHIP RESISTOR	
R1503	ERDS2TJ151T	CARBON RESISTOR	
R1511	ERJ3GEYJ273V	CHIP RESISTOR	
R1512	ERJ3GEYJ273V	CHIP RESISTOR	
R1513	ERJ6GEYJ121V	CHIP RESISTOR	
R2001	ERJ3GEYJ392V	CHIP RESISTOR	
R2002	ERJ3GEYJ105V	CHIP RESISTOR	
R2099	ERJ3GEYJ682V	CHIP RESISTOR	
R2501	ERJ6GEYJ1R2V	CHIP RESISTOR	
R2503	ERJ6GEYJ1R5V	CHIP RESISTOR	
R2514	ERJ3GEYJ221V	CHIP RESISTOR	
R2515	ERJ3GEYJ221V	CHIP RESISTOR	
R2516	ERJ3GEYJ221V	CHIP RESISTOR	
R2519	ERJ6GEYJ822V	CHIP RESISTOR	
R2520	ERJ3GEYJ183V	CHIP RESISTOR	
R2521	ERJ3GEYJ102V	CHIP RESISTOR	
R2522	ERJ3GEYJ101V	CHIP RESISTOR	
R2523	ERJ3GEYJ101V	CHIP RESISTOR	
R2551	ERJ3GEYJ103V	CHIP RESISTOR	
R2552	ERJ3GEYJ103V	CHIP RESISTOR	
R2561	ERJ3GEYJ102V	CHIP RESISTOR	
R2562	ERJ3GEYJ473V	CHIP RESISTOR	
R2563	ERJ3GEYJ102V	CHIP RESISTOR	
R3001	ERJ3GEYJ622V	CHIP RESISTOR	
R3002	ERJ3GEYJ822V	CHIP RESISTOR	
R3003	ERJ3GEYJ152V	CHIP RESISTOR	
R3004	ERJ3GEYJ682V	CHIP RESISTOR	
R3005	ERJ3GEYJ472V	CHIP RESISTOR	
R3011	ERJ3GEYJ332V	CHIP RESISTOR	
R3012	ERJ3GEYJ102V	CHIP RESISTOR	
R3013	ERJ3GEYJ273V	CHIP RESISTOR	
R3018	ERJ3GEYJ153V	CHIP RESISTOR	
R3020	ERJ3GEYJ152V	CHIP RESISTOR	
R3021	ERJ3GEYJ331V	CHIP RESISTOR	
R3024	ERJ3GEYJ102V	CHIP RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
R3025	ERJ3GEYJ332V	CHIP RESISTOR	
R3026	ERJ3GEYJ332V	CHIP RESISTOR	
R3029	ERJ3GEYJ822V	CHIP RESISTOR	
R3031	ERJ3GEY0R00V	CHIP JUMPER	
R3032	ERJ3GEYJ685V	CHIP RESISTOR	
R3033	ERJ3GEYJ335V	CHIP RESISTOR	
R3038	ERJ3GEYJ222V	CHIP RESISTOR	*3
R3040	ERJ3GEYJ392V	CHIP RESISTOR	
R3041	ERJ3GEYJ221V	CHIP RESISTOR	
R3042	ERJ3GEYJ473V	CHIP RESISTOR	
R3702	ERJ3GEYJ332V	CHIP RESISTOR	
R3711	ERJ3GEYJ680V	CHIP RESISTOR	
R3712	ERJ3GEYJ750V	CHIP RESISTOR	
R3717	ERJ3GEYJ471V	CHIP RESISTOR	
R3718	ERDS2TJ681T	CARBON RESISTOR	
R4002	ERJ3GEYJ103V	CHIP RESISTOR	
R4011	ERJ3GEYJ472V	CHIP RESISTOR	
R4012	ERJ3GEYJ153V	CHIP RESISTOR	
R4015	ERJ3GEYJ203V	CHIP RESISTOR	
R4016	ERJ3GEYJ473V	CHIP RESISTOR	
R4017	ERJ3GEYJ563V	CHIP RESISTOR	
R4061	ERJ3GEYJ334V	CHIP RESISTOR	
R4062	ERJ3GEYJ103V	CHIP RESISTOR	
R4063	ERJ3GEYJ201V	CHIP RESISTOR	
R4071	ERJ3GEYJ153V	CHIP RESISTOR	
R4081	ERJ3GEYJ103V	CHIP RESISTOR	
R4082	ERJ3GEYJ332V	CHIP RESISTOR	
R4084	ERJ3GEYJ102V	CHIP RESISTOR	
R4085	ERJ3GEYJ102V	CHIP RESISTOR	
R4086	ERJ3GEYJ222V	CHIP RESISTOR	
R4087	ERJ3GEYJ222V	CHIP RESISTOR	
R4301	ERJ3GEYJ683V	CHIP RESISTOR	
R4302	ERJ3GEYJ683V	CHIP RESISTOR	
R4303	ERJ3GEYJ472V	CHIP RESISTOR	
R4304	ERJ3GEYJ472V	CHIP RESISTOR	
R4403	ERJ3GEYJ471V	CHIP RESISTOR	
R4404	ERJ3GEYJ471V	CHIP RESISTOR	
R4405	ERJ3GEY0R00V	CHIP JUMPER	
R4406	ERJ3GEY0R00V	CHIP JUMPER	
R4424	ERJ3GEYJ471V	CHIP RESISTOR	
R4425	ERJ3GEYJ471V	CHIP RESISTOR	
R4500	ERJ3GEYJ102V	CHIP RESISTOR	
R4501	ERJ3GEYJ513V	CHIP RESISTOR	
R4502	ERJ3GEYJ513V	CHIP RESISTOR	
R4503	ERJ3GEYJ513V	CHIP RESISTOR	
R4505	ERJ3GEYJ392V	CHIP RESISTOR	
R4506	ERJ3GEYJ392V	CHIP RESISTOR	
R4507	ERJ3GEYJ513V	CHIP RESISTOR	
R4508	ERJ3GEYJ392V	CHIP RESISTOR	
R4509	ERJ3GEYJ513V	CHIP RESISTOR	
R4510	ERJ3GEYJ392V	CHIP RESISTOR	
R4511	ERJ3GEYJ513V	CHIP RESISTOR	
R4512	ERJ3GEYJ392V	CHIP RESISTOR	
R4513	ERJ3GEYJ222V	CHIP RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
R4515	ERJ3GEYJ392V	CHIP RESISTOR	
R4525	ERJ3GEYJ102V	CHIP RESISTOR	
R4527	ERJ3GEYJ681V	CHIP RESISTOR	
R4530	ERJ3GEYJ472V	CHIP RESISTOR	
R4532	ERJ3GEYJ472V	CHIP RESISTOR	
R4534	D0GB124JA002	CHIP RESISTOR	
R4538	ERJ3GEYJ333V	CHIP RESISTOR	
R4539	ERJ3GEYJ331V	CHIP RESISTOR	
R4540	ERJ3GEYJ331V	CHIP RESISTOR	
R4581	ERJ3GEYJ333V	CHIP RESISTOR	
R4582	ERJ3GEYJ333V	CHIP RESISTOR	
R4583	ERJ3GEYJ563V	CHIP RESISTOR	
R4584	ERJ3GEYJ563V	CHIP RESISTOR	
R4585	ERJ3GEYJ511V	CHIP RESISTOR	
R4586	ERJ3GEYJ511V	CHIP RESISTOR	
R4601	ERJ3GEYJ393V	CHIP RESISTOR	
R4602	ERJ3GEYJ682V	CHIP RESISTOR	
R4651	ERJ3GEYJ681V	CHIP RESISTOR	
R6001	ERJ3GEYJ102V	CHIP RESISTOR	
R6002	ERJ3GEYJ102V	CHIP RESISTOR	
R6003	ERJ3GEYJ223V	CHIP RESISTOR	
R6004	ERJ3GEYJ221V	CHIP RESISTOR	
R6005	ERJ3GEYJ103V	CHIP RESISTOR	
R6006	ERJ3GEYJ183V	CHIP RESISTOR	
R6007	ERJ3GEYJ183V	CHIP RESISTOR	
R6009	ERJ3GEYJ103V	CHIP RESISTOR	
R6010	ERJ3GEYJ103V	CHIP RESISTOR	
R6011	ERJ3GEYJ183V	CHIP RESISTOR	
R6012	ERJ3GEYJ561V	CHIP RESISTOR	
R6013	ERJ3GEYJ105V	CHIP RESISTOR	
R6016	ERJ3GEYG103V	CHIP RESISTOR	
R6017	ERJ3GEYJ222V	CHIP RESISTOR	
R6019	ERJ3GEYJ103V	CHIP RESISTOR	*2,*3
R6020	ERJ3GEYJ183V	CHIP RESISTOR	
R6021	ERJ3GEYJ183V	CHIP RESISTOR	
R6022	ERJ3GEYJ102V	CHIP RESISTOR	
R6023	ERJ3GEYJ103V	CHIP RESISTOR	*1
R6026	ERJ3GEYJ332V	CHIP RESISTOR	
R6028	ERJ3GEYG103V	CHIP RESISTOR	
R6029	ERJ3GEYG103V	CHIP RESISTOR	
R6031	ERJ3GEYJ471V	CHIP RESISTOR	
R6032	ERJ3GEYJ471V	CHIP RESISTOR	
R6102	ERJ3GEYJ222V	CHIP RESISTOR	
R6104	ERJ3GEYJ221V	CHIP RESISTOR	
R6105	ERJ3GEYJ221V	CHIP RESISTOR	
R6106	ERJ3GEYJ221V	CHIP RESISTOR	
R6107	ERJ3GEYJ221V	CHIP RESISTOR	
R6201	ERJ3GEYJ332V	CHIP RESISTOR	
R6307	ERJ6GEYJ222V	CHIP RESISTOR	
R6309	ERDS2TJ821T	CARBON RESISTOR	
R6310	ERJ6GEYJ182V	CHIP RESISTOR	
R6400	ERJ3GEYJ101V	CHIP RESISTOR	
R6401	ERJ3GEYJ101V	CHIP RESISTOR	
R6405	ERJ3GEYJ473V	CHIP RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
R7305	ERJ3GEYJ101V	CHIP RESISTOR	*3
R7306	ERJ3GEYJ392V	CHIP RESISTOR	*3
R7307	ERJ3GEYJ472V	CHIP RESISTOR	*3
R7308	ERJ3GEYJ752V	CHIP RESISTOR	*3
R7310	ERJ3GEYJ221V	CHIP RESISTOR	*3
R7312	ERJ3GEYG682V	CHIP RESISTOR	*3
R7313	ERJ3GEYG682V	CHIP RESISTOR	*3
R7314	ERJ3GEYG682V	CHIP RESISTOR	*3
R7315	ERJ3GEYG432V	CHIP RESISTOR	*3
R7316	ERJ3GEYG332V	CHIP RESISTOR	*3
R7317	ERJ3GEYG432V	CHIP RESISTOR	*3
R7318	ERJ3GEYG332V	CHIP RESISTOR	*3
R7319	ERJ3GEYG432V	CHIP RESISTOR	*3
R7320	ERJ3GEYG332V	CHIP RESISTOR	*3
R7321	D0GB562JA008	CHIP RESISTOR	*3
R7323	ERJ3GEYJ912V	CHIP RESISTOR	*3
R7324	ERJ3GEYJ101V	CHIP RESISTOR	*3
R7325	ERJ3GEYJ101V	CHIP RESISTOR	*3
R7601	ERDS2TJ331T	CARBON RESISTOR	
R7606	J0JCC0000124	CHIP COIL	
R7607	J0JCC0000124	CHIP COIL	
R7611	ERDS2TJ331T	CARBON RESISTOR	
R7612	ERJ3GEY0R00V	CHIP JUMPER	
R7613	ERJ3GEY0R00V	CHIP JUMPER	
R7706	ERJ3GEYJ101V	CHIP RESISTOR	*1,*2
R7707	ERJ3GEYJ102V	CHIP RESISTOR	*1,*2
R7751	ERJ3GEYJ102V	CHIP RESISTOR	
R33001	ERDS2TJ271T	CARBON RESISTOR	
R33002	ERJ3GEYJ222V	CHIP RESISTOR	
R33003	ERJ3GEYJ103V	CHIP RESISTOR	
R33004	ERJ3GEYJ221V	CHIP RESISTOR	
R33005	ERJ3GEYJ221V	CHIP RESISTOR	
R33374	ERJ3GEYF750V	CHIP RESISTOR	
R33571	ERJ3GEYF750V	CHIP RESISTOR	
R33572	ERJ3GEYF750V	CHIP RESISTOR	
R33573	ERJ3GEYF750V	CHIP RESISTOR	
R34002	ERJ3GEYJ102V	CHIP RESISTOR	
R34003	ERDS2TJ471T	CARBON RESISTOR	
R34004	ERDS2TJ471T	CARBON RESISTOR	
R34005	D0GB562JA008	CHIP RESISTOR	
R34301	ERJ3GEYF750V	CHIP RESISTOR	
R34302	ERJ3GEYF750V	CHIP RESISTOR	
R34371	D0HB221ZA002	CHIP RESISTOR	
R34372	D0HB221ZA002	CHIP RESISTOR	
R34422	ERJ3GEYJ473V	CHIP RESISTOR	
R34423	ERJ3GEYJ473V	CHIP RESISTOR	
R34428	D0HB821ZA002	CHIP RESISTOR	
R34429	D0HB821ZA002	CHIP RESISTOR	
R36006	ERJ3GEYJ473V	CHIP RESISTOR	
R36007	ERJ3GEYJ473V	CHIP RESISTOR	
R36008	ERJ3GEYJ473V	CHIP RESISTOR	
R36010	ERDS2TJ391T	CARBON RESISTOR	
R36013	ERJ3GEYJ473V	CHIP RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
R36014	ERJ3GEYJ473V	CHIP RESISTOR	
R36018	ERJ3GEYJ103V	CHIP RESISTOR	
R36019	ERJ3GEYJ103V	CHIP RESISTOR	
R36021	ERJ3GEYJ303V	CHIP RESISTOR	
R36022	ERJ3GEYJ473V	CHIP RESISTOR	
R36033	ERJ3GEYJ221V	CHIP RESISTOR	
R36036	ERJ3GEYJ102V	CHIP RESISTOR	
R36037	ERJ3GEYJ102V	CHIP RESISTOR	
R36057	ERJ3GEYJ473V	CHIP RESISTOR	
R36058	ERJ3GEYJ473V	CHIP RESISTOR	
R36059	ERJ3GEYJ103V	CHIP RESISTOR	
R36061	ERJ3GEYJ153V	CHIP RESISTOR	
R36074	ERJ3GEYJ103V	CHIP RESISTOR	
R36075	ERJ3GEYJ103V	CHIP RESISTOR	
R36105	ERJ3GEYJ473V	CHIP RESISTOR	
R36106	ERJ3GEYJ473V	CHIP RESISTOR	
R36107	ERJ3GEYJ473V	CHIP RESISTOR	
R36108	ERJ3GEYJ473V	CHIP RESISTOR	
R36109	ERJ3GEYJ473V	CHIP RESISTOR	
R36110	ERJ3GEYJ473V	CHIP RESISTOR	
R36111	ERJ3GEYJ473V	CHIP RESISTOR	
R36112	ERJ3GEYJ473V	CHIP RESISTOR	
R36113	ERJ3GEYJ473V	CHIP RESISTOR	
R36114	ERJ3GEYJ473V	CHIP RESISTOR	
R36115	ERJ3GEYJ473V	CHIP RESISTOR	
R36116	ERJ3GEYJ473V	CHIP RESISTOR	
R36117	ERJ3GEYJ473V	CHIP RESISTOR	
R36118	ERJ3GEYJ473V	CHIP RESISTOR	
R36119	ERJ3GEYJ473V	CHIP RESISTOR	
R36120	ERJ3GEYJ473V	CHIP RESISTOR	
R36121	ERJ3GEYJ473V	CHIP RESISTOR	
R36122	ERJ3GEYJ473V	CHIP RESISTOR	
R36123	ERJ3GEYJ473V	CHIP RESISTOR	
R36124	ERJ3GEYJ473V	CHIP RESISTOR	
R36125	ERDS2TJ220T	CARBON RESISTOR	
R36126	ERDS2TJ220T	CARBON RESISTOR	
S1531	K0C111A00006	TAB SWITCH	
S1532	K0ZZ00000598	MODE SWITCH	
T4081	EQQ7QF024Q	IF TRANSFORMER	
TU7601	ENG57818G1	TUNER	*1,*2
TU7601	ENG57820G1	TUNER	*3
W701	ERJ3GEY0R00V	CHIP JUMPER	
W702	ERJ3GEY0R00V	CHIP JUMPER	
W703	ERJ3GEY0R00V	CHIP JUMPER	
W704	ERJ3GEY0R00V	CHIP JUMPER	
W705	ERJ3GEY0R00V	CHIP JUMPER	
W706	ERJ3GEY0R00V	CHIP JUMPER	
W707	ERJ3GEY0R00V	CHIP JUMPER	
W708	ERJ3GEY0R00V	CHIP JUMPER	
W709	ERJ3GEY0R00V	CHIP JUMPER	

Ref. No.	Part No.	Part Name & Description	Remarks
W711	ERJ3GEY0R00V	CHIP JUMPER	
W712	ERJ3GEY0R00V	CHIP JUMPER	
W713	D0GDR00JA017	CHIP JUMPER	
W714	D0GDR00JA017	CHIP JUMPER	
W715	D0GDR00JA017	CHIP JUMPER	
W716	D0GDR00JA017	CHIP JUMPER	
W717	D0GDR00JA017	CHIP JUMPER	
W719	D0GDR00JA017	CHIP JUMPER	
W720	ERJ3GEY0R00V	CHIP JUMPER	
X3001	H0D357400067	CRYSTAL OSCILLATOR	
X3002	H0D443400039	CRYSTAL OSCILLATOR	
X6001	H0D120500009	CRYSTAL OSCILLATOR	
X6002	H0A327200064	CRYSTAL OSCILLATOR	
X7301	H0H400400006	CRYSTAL OSCILLATOR	*3
X36001	H2D800400009	CRYSTAL OSCILLATOR	
		MISCELLANEOUS	
	VMD4258	PHOTO TRANSISTOR HOLDER	
	VMD4258	PHOTO TRANSISTOR HOLDER	
	VEP01940A	POWER C.B.A	(RTL)
C1122	F1BAF331A013	CERAMIC CAP	⚠
C1124	F1BAF1020020	CERAMIC CAP	⚠
C1125	ECQU2A683MVA	POLYESTER CAPACITOR	⚠
C1141	ECEC2GG680FZ	E-CAP	
C1151	ECQB1H223JF3	POLYSTER CAPACITOR	⚠
C1152	ECQB1H103JF3	POLYESTER CAPACITOR	
C1153	ECQV1H104JL3	FILM CAPACITORS	
C1154	ECQB1H223JF3	POLYSTER CAPACITOR	⚠
C1155	ECKN3A271KBP	CAPACITOR	
C1200	ECQV1H104JL3	FILM CAPACITORS	
C1210	F1B3A332A004	CERAMIC CAPACITOR	
C1230	F2A1H2200032	E-CAP	
C1240	F2A1A1020056	E-CAP	
C1241	F2A1A221A206	E CAP	
C1242	ECA1CHJ221B	E-CAP	
C1250	F2A1E6810011	E-CAP	⚠
C1251	F2A1E101A205	E-CAP	
C1260	F2A1A1020056	E-CAP	
C1261	ECA1AHJ331B	E-CAP	
C1262	F2A1A1020056	E-CAP	
C1263	ECJ2VB1E104K	CHIP CAPACITOR	
C1264	F2A0J470A245	E-CAP	
C1270	F2A1H2200032	E-CAP	
C1280	F2A1C4710055	E CAP	
C1290	F2A1C6810023	E-CAP	
C1291	F2A1C101A236	E-CAP	
C1295	ECA1CHJ221B	E-CAP	

Ref. No.	Part No.	Part Name & Description	Remarks
D1110	ERZVA5V471	ZNR	⚠
D1140	B0KB00000013	BRIDGE DIODE	
D1152	MA2C18500E	DIODE	⚠
D1155	MA2C165001VT	DIODE	
D1157	MAZ40360MF	DIODE	
D1180	MAZ751000C	DIODE	
D1210	B0HAGM000006	DIODE	
D1230	MA2C18500E	DIODE	⚠
D1240	B0JAGE000001	DIODE	
D1241	B0JAGE000001	DIODE	
D1250	B0JAMK000015	DIODE	
D1251	B0JAMK000015	DIODE	
D1261	B0JAPE000008	DIODE	
D1262	MA2C165001VT	DIODE	
D1263	MA2C165001VT	DIODE	
D1264	MA2C165001VT	DIODE	
D1265	D0AE562JA048	CARBON RESISTOR	
D1270	MA2C18500E	DIODE	⚠
D1280	B0JAGE000001	DIODE	
D1290	B0JAMK000015	DIODE	
D1291	B0AAML000002	DIODE	
D1292	B0AAML000002	DIODE	
D1293	B0AAML000002	DIODE	
D1294	B0JAGE000001	DIODE	
D1295	B0JAMK000015	DIODE	
F1101	K5D162BK0005	FUSE	⚠
IC1200	C0DAEMZ00001	TRANSISTOR	
IC1240	C0DBEKG00003	RESET IC	
IC1290	C0DBZHG00013	RESET IC	
IP1240	K5G252AA0003	IC PROTECTOR	⚠
IP1280	K5G252AA0003	IC PROTECTOR	⚠
L1120	ELF15N005A	LINE FILTER	⚠
L1121	ELF15N005A	LINE FILTER	⚠
L1240	G0A220G00018	COIL	
L1250	G0A220G00018	COIL	
L1260	G0A100H00014	COIL	
L1290	G0A220G00018	COIL	
LB1214	ERJ3GEY0R00V	CHIP JUMPER	
LB1218	ERJ3GEY0R00V	CHIP JUMPER	
LR1150	J1ZZA0000004	RESONAN SNUBBER	
P1101	K2AA2H000007	AC INLET	⚠
P1102	K1KA19A00007	CONNECTOR	
P1103	K1KA02A00010	CONNECTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q1150	B1DEDR000003	TRANSISTOR	
Q1151	2SD1992AHA	TRANSISTOR SI 3.5MH 0.4W	
Q1152	2SC3311ASA	TRANSISTOR	
Q1153	B1DEEQ000001	TRANSISTOR	
Q1200	B3PBA0000078	PHOTO COUPLER	⚠
Q1260	2SD0601A0L	CHIP TRANSISTOR	
Q1290	2SB14170PA	TRANSISTOR	
Q1291	2SD0601A0L	CHIP TRANSISTOR	
QR1201	UNR221100L	DIGITAL TRANSISTOR	
QR1202	UNR221100L	DIGITAL TRANSISTOR	
R1150	ERDS2TJ105T	CARBON RESISTOR	
R1153	ERG2SJ331E	METAL OXIDE RESISTOR	
R1154	ERDS2TJ105T	CARBON RESISTOR	
R1155	ERJ6GEYJ104V	CHIP RESISTOR	
R1156	ERJ6GEYJ330V	CHIP RESISTOR	
R1157	ERJ6GEYG562V	CHIP RESISTOR	
R1158	ERJ6GEYJ331V	CHIP RESISTOR	
R1159	ERJ6GEYJ3R3V	CHIP RESISTOR	
R1160	ERX1SJR22E	1W RESISTOR	
R1161	ERDS2TJ101T	CARBON RESISTOR	
R1162	ERDS2TJ102T	CARBON RESISTOR	
R1163	ERDS2TJ101T	CARBON RESISTOR	
R1200	ERJ6GEYG333V	CHIP RESISTOR	
R1201	ERJ6GEYG333V	CHIP RESISTOR	
R1202	ERJ6GEYG222V	CHIP RESISTOR	
R1203	ERJ6GEYG223V	CHIP RESISTOR	
R1204	ERJ6GEYJ123V	CHIP RESISTOR	
R1205	ERJ6GEYJ222V	CHIP RESISTOR	
R1206	ERJ6GEYJ271V	CHIP RESISTOR	
R1207	ERJ6GEYG822V	CHIP RESISTOR	
R1208	ERJ6GEYG563V	CHIP RESISTOR	
R1209	ERJ3GEYJ103V	CHIP RESISTOR	
R1230	ERJ3GEYJ473V	CHIP RESISTOR	
R1240	ERJ6GEYG223V	CHIP RESISTOR	
R1241	ERJ6GEYG393V	CHIP RESISTOR	
R1242	ERJ6GEYG822V	CHIP RESISTOR	
R1260	D0AE272JA048	CARBON RESISTOR	
R1290	ERDS2TJ331T	CARBON RESISTOR	
R1291	ERDS1VJ681T	CARBON RESISTOR	
R1292	ERJ6GEYG222V	CHIP RESISTOR	
R1293	ERJ6GEYG151V	CHIP RESISTOR	
T1150	G4D2A0000159	SW TRANSFORMER	
ZA1103	EYF52BC	FUSE HOLDER	
ZA1104	EYF52BC	FUSE HOLDER	
	VEP04849A	FRONT JACK C.B.A	(RTL)
C7551	ECJ1VF1C104Z	CHIP CAPACITOR	
IC7551	PNA4618M12VT	IR RECEIVER	

[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Remarks
JK4801	K2HA303A0004	I/O JACK	
LB4801	D0GDR00JA017	CHIP JUMPER	
LB4802	D0GDR00JA017	CHIP JUMPER	
PP4802	K1KA10C00008	CONNECTOR	
R4801	ERJ3GEY0R00V	CHIP JUMPER	
R4802	ERJ3GEY0R00V	CHIP JUMPER	
R4803	ERJ3GEYJ750V	CHIP RESISTOR	
R7551	ERJ3GEYJ221V	CHIP RESISTOR	
R7561	ERJ3GEYJ182V	CHIP RESISTOR	
R7562	ERJ3GEYJ332V	CHIP RESISTOR	
R7563	ERJ3GEYJ472V	CHIP RESISTOR	
R7564	ERJ3GEYJ682V	CHIP RESISTOR	
R7565	ERJ3GEYJ182V	CHIP RESISTOR	
R7566	ERJ3GEYJ332V	CHIP RESISTOR	
R7567	ERJ3GEYJ472V	CHIP RESISTOR	
R7568	ERJ3GEYJ682V	CHIP RESISTOR	
R7569	ERJ3GEYJ123V	CHIP RESISTOR	
R7570	ERJ3GEYJ223V	CHIP RESISTOR	
S7561	EVQ11L07B	TACK SWITCH	
S7562	EVQ11L07B	TACK SWITCH	
S7563	EVQ11L07B	TACK SWITCH	
S7564	EVQ11L07B	TACK SWITCH	
S7565	EVQ11L07B	TACK SWITCH	
S7566	EVQ11L07B	TACK SWITCH	
S7568	EVQ11L07B	TACK SWITCH	
S7569	EVQ11L07B	TACK SWITCH	
S7570	EVQ11L07B	TACK SWITCH	
S7571	EVQ11L07B	TACK SWITCH	
S7572	EVQ11L07B	TACK SWITCH	
W501	ERJ3GEY0R00V	CHIP JUMPER	
	VEP06F50A	FRONT SW C.B.A.	(RTL)
PP7581	K1KA06C00009	CONNECTOR	
R7581	ERJ3GEYJ182V	CHIP RESISTOR	
R7582	ERJ3GEYJ332V	CHIP RESISTOR	
R7583	ERJ3GEYJ472V	CHIP RESISTOR	
R7584	ERJ3GEYJ682V	CHIP RESISTOR	
R7585	ERJ3GEYJ182V	CHIP RESISTOR	
R7586	ERJ3GEYJ123V	CHIP RESISTOR	
S7581	EVQ11L07B	TACK SWITCH	
S7582	EVQ11L07B	TACK SWITCH	
S7583	EVQ11L07B	TACK SWITCH	
S7584	EVQ11L07B	TACK SWITCH	
S7585	EVQ11L07B	TACK SWITCH	

Ref. No.	Part No.	Part Name & Description	Remarks
S7586	EVQ11L07B	TACK SWITCH	
S7587	EVQ11L07B	TACK SWITCH	
S7588	EVQ11L07B	TACK SWITCH	
	REP3597B	DVD MODULE C.B.A	(RTL)
C2001	F2G0J1010013	SMT FLAP	
C2002	EEE0JA101SP	SMT ECAP	
C2003	F1H1C104A083	CERAMIC CAP	
C2004	F1H1C104A083	CERAMIC CAP	
C2005	F1H1C104A083	CERAMIC CAP	
C2006	F1H1C104A083	CERAMIC CAP	
C2011	ECJ1VB1C104K	CONDENSER	
C2012	ECJ1VB1C104K	CONDENSER	
C2015	ECJ1VC1H102J	CHIP CAPACITOR	
C2016	ECJ1VC1H821J	CHIP CAP	
C2021	ECJ1VB1H472K	CHIP CAPACITOR	
C2023	ECJ1VC1H102J	CHIP CAPACITOR	
C2031	ECJ1VF1A105Z	CHIP CAPACITOR	
C2032	ECJ1VF1A105Z	CHIP CAPACITOR	
C2033	F1H0J1050013	CHIP INDUCTOR	
C2034	ECJ1VB1H153K	CHIP CAPACITOR	
C2035	ECJ1VC1H221J	CHIP CAPACITOR	
C2036	ECJ1VB1C104K	CONDENSER	
C2037	ECJ1VB1H103K	CHIP CAPACITOR	
C2051	ECJ1VB1C333K	CHIP CAPACITOR	
C2052	ECJ1VC1H330J	CHIP CAPACITOR	
C2053	F1H1C104A083	CERAMIC CAP	
C2054	F1H1C104A083	CERAMIC CAP	
C2055	F1H1C104A083	CERAMIC CAP	
C2056	ECJ1VB1H103K	CHIP CAPACITOR	
C2057	ECJ1VC1H181J	CHIP CAPACITOR	
C2058	ECJ1VB1C183K	CHIP CAPACITOR	
C2059	ECJ1VB1H562K	CHIP CAPACITOR	
C2060	ECJ1VB1C104K	CONDENSER	
C3001	F2G0J331A015	E.CAPACITOR	
C3002	F2G0J331A015	E.CAPACITOR	
C3003	F1H1C104A083	CERAMIC CAP	
C3004	F1H1C104A083	CERAMIC CAP	
C3005	F1H1C104A083	CERAMIC CAP	
C3006	F1H1C104A083	CERAMIC CAP	
C3007	F1H1C104A083	CERAMIC CAP	
C3008	F1H1C104A083	CERAMIC CAP	
C3009	F1H1C104A083	CERAMIC CAP	
C3010	F1H1C104A083	CERAMIC CAP	
C3011	F1H1C104A083	CERAMIC CAP	
C3012	F1H1C104A083	CERAMIC CAP	
C3013	F1H1C104A083	CERAMIC CAP	
C3014	F1H1C104A083	CERAMIC CAP	
C3015	F1H1C104A083	CERAMIC CAP	
C3016	F1H1C104A083	CERAMIC CAP	
C3017	F1H1C104A083	CERAMIC CAP	
C3018	F1H1C104A083	CERAMIC CAP	
C3019	ERJ3GEYJ331V	CHIP RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
C3020	F1H1C104A083	CERAMIC CAP	
C3021	F1H1C104A083	CERAMIC CAP	
C3022	F1H1C104A083	CERAMIC CAP	
C3023	F1H1C104A083	CERAMIC CAP	
C3024	F1H1C104A083	CERAMIC CAP	
C3025	F1H1C104A083	CERAMIC CAP	
C3026	F1H1C104A083	CERAMIC CAP	
C3027	F1H1C104A083	CERAMIC CAP	
C3028	F1H1C104A083	CERAMIC CAP	
C3029	F1H1C104A083	CERAMIC CAP	
C3031	F1H1C104A083	CERAMIC CAP	
C3032	F1H1C104A083	CERAMIC CAP	
C3033	F1H1C104A083	CERAMIC CAP	
C3041	ECJ1VC1H220J	CHIP CAPACITOR	
C3051	F1H1C104A083	CERAMIC CAP	
C3052	F1H1C104A083	CERAMIC CAP	
C3053	F1H1C104A083	CERAMIC CAP	
C3054	F1H1C104A083	CERAMIC CAP	
C3055	F1H1C104A083	CERAMIC CAP	
C3056	F1H1C104A083	CERAMIC CAP	
C3057	F1H1C104A083	CERAMIC CAP	
C3058	F1H1C104A083	CERAMIC CAP	
C3059	F1H1C104A083	CERAMIC CAP	
C3060	F1H1C104A083	CERAMIC CAP	
C3061	F1H1C104A083	CERAMIC CAP	
C3062	F1H1C104A083	CERAMIC CAP	
C3101	F2G0J331A015	E.CAPACITOR	
C3102	F1H1C104A083	CERAMIC CAP	
C3103	F1H1C104A083	CERAMIC CAP	
C3104	F1H1C104A083	CERAMIC CAP	
C3105	F1H0J1050013	CHIP INDUCTOR	
C3106	F1H0J1050013	CHIP INDUCTOR	
C3107	F1H1C104A083	CERAMIC CAP	
C4201	F2G0J331A015	E.CAPACITOR	
C4203	F1H1C104A083	CERAMIC CAP	
C4204	F3F1A106A001	TENTALUM CAPACITOR	
C4206	F2G0J330A015	E.CAPACITOR	
C4208	F1H1C104A083	CERAMIC CAP	
C4313	F1H1C104A083	CERAMIC CAP	
C4314	F1H1C104A083	CERAMIC CAP	
C4315	F1H1C104A083	CERAMIC CAP	
C4323	EEE1AA101SP	SMT ECAP	
C4324	EEE1AA101SP	SMT ECAP	
C4325	ECJ1VC1H471J	CHIP CAPACITOR	
C4326	ECJ1VC1H471J	CHIP CAPACITOR	
C4336	ECJ1VC1H470J	CHIP CAPACITOR	
C4337	ECJ1VC1H470J	CHIP CAPACITOR	
C4414	EEEHB0J470R	SMT ECAP	
C4415	EEEHB0J470R	SMT ECAP	
C5201	F1H1C104A083	CERAMIC CAP	
C5202	F1H1C104A083	CERAMIC CAP	
C5203	F1H1C104A083	CERAMIC CAP	
C5221	EEE0JA330WR	SMT ECAP	
C5222	F1H1C104A083	CERAMIC CAP	

Ref. No.	Part No.	Part Name & Description	Remarks
C5223	EEE1EA4R7SR	SMT ECAP	
C5225	F1H1C104A083	CERAMIC CAP	
C5226	EEE1EA4R7SR	SMT ECAP	
C5231	ECJ1VB1C104K	CONDENSER	
C5232	ECJ1VB1C104K	CONDENSER	
C6201	F1H1C104A083	CERAMIC CAP	
C6202	ECJ1VC1H101J	CHIP CAPACITOR	
C6251	ECJ1VB1C104K	CONDENSER	
C6252	F1H0J1050013	CHIP INDUCTOR	
C6253	ECJ1VB1H103K	CHIP CAPACITOR	
C6255	EEE0JA101SP	SMT ECAP	
C6301	F1H1C104A083	CERAMIC CAP	
C6302	F1H1C104A083	CERAMIC CAP	
C6311	F1H1C104A083	CERAMIC CAP	
C6312	F1H1C104A083	CERAMIC CAP	
C6351	F1H1C104A083	CERAMIC CAP	
C6561	EEE0JA330WR	SMT ECAP	
C6562	EEE0JA330WR	SMT ECAP	
C6563	F1H1C104A083	CERAMIC CAP	
C6564	F1H1C104A083	CERAMIC CAP	
C6565	ECJ1VC1H150J	CHIP CAPACITOR	
C6566	ECJ1VC1H150J	CHIP CAPACITOR	
C6567	F1H1C104A083	CERAMIC CAP	
C6568	ECJ1VC1H150J	CHIP CAPACITOR	
D4301	MAZ80560HL	ZENER DIODE	
D6251	B0ECKP000002	CHIP DIODE	
FL4201	F1H0J1050018	CHIP CAPACITOR	
FL6251	F1J1E1040022	CHIP CAPACITOR	
FL6252	F1H0J1050018	CHIP CAPACITOR	
FL6253	F1H0J1050018	CHIP CAPACITOR	
FL6254	F1H0J1050018	CHIP CAPACITOR	
FP5201	K1MN50A00005	50P CONNECTOR	
IC3001	MN2DS0002AP1	LSI IC	
IC3051	C3ABPJ000052	SDRAM IC	
IC4201	C0FBBK000035	D/A CONVERTER IC	
IC4301	C0ABBB000228	OP-AMP IC	
IC6201	C0EBE0000070	IC	
IC6251	C0CBCBE00003	REGULATOR IC	
IC6301	RFKFVP71K160	FLASH ROM IC	[AVC SPC]
IC6311	C0JBAZ001251	IC	
IC6312	C0JBAZ001251	IC	
IC6351	C3EBGC000044	EEPROM IC	
IC6561	C1DB00000980	CLOCK GENERATOR IC	
K2041	ERJ3GEY0R00V	CHIP JUMPER	
K4301	J0JBC0000041	CHIP INDUCTOR	
K4302	J0JBC0000041	CHIP INDUCTOR	
K6301	ERJ3GEY0R00V	CHIP JUMPER	
K6302	ERJ3GEY0R00V	CHIP JUMPER	
K6501	ERJ6GEY0R00V	CHIP JUMPER	

Ref. No.	Part No.	Part Name & Description	Remarks
L2001	G1C100K00020	CHIP INDUCTOR	
L2002	G1C100K00020	CHIP INDUCTOR	
L3101	G1C100K00020	CHIP INDUCTOR	
L4211	G1C220KA0038	CHIP CAPACITOR	
L5221	G1C100K00020	CHIP INDUCTOR	
L6561	G1C220KA0038	CHIP CAPACITOR	
L6562	G1C220KA0038	CHIP CAPACITOR	
LB3001	J0JHC0000045	CHIP INDUCTOR	
LB3002	J0JHC0000045	CHIP INDUCTOR	
LB3201	ERJ3GEYJ101V	CHIP RESISTOR	
LB3202	ERJ3GEYJ101V	CHIP RESISTOR	
LB3203	ERJ3GEYJ101V	CHIP RESISTOR	
LB3204	J0JCC0000119	FERRITE BEAD	
LB3205	J0JCC0000119	FERRITE BEAD	
LB3206	J0JCC0000119	FERRITE BEAD	
LB3207	J0JCC0000119	FERRITE BEAD	
LB3208	J0JCC0000119	FERRITE BEAD	
LB3209	J0JCC0000119	FERRITE BEAD	
LB4200	J0JBC0000015	CHIP INDUCTOR	
LB4201	J0JCC0000119	FERRITE BEAD	
LB4202	J0JBC0000015	CHIP INDUCTOR	
LB4203	J0JBC0000015	CHIP INDUCTOR	
LB4204	J0JBC0000015	CHIP INDUCTOR	
LB4205	J0JBC0000015	CHIP INDUCTOR	
LB4206	J0JBC0000015	CHIP INDUCTOR	
LB4214	J0JCC0000119	FERRITE BEAD	
LB4215	J0JCC0000119	FERRITE BEAD	
LB4216	J0JBC0000015	CHIP INDUCTOR	
LB4218	J0JBC0000015	CHIP INDUCTOR	
LB4220	J0JBC0000015	CHIP INDUCTOR	
LB4221	J0JBC0000015	CHIP INDUCTOR	
LB4222	J0JBC0000015	CHIP INDUCTOR	
LB5201	J0JBC0000015	CHIP INDUCTOR	
LB5204	J0JCC0000119	FERRITE BEAD	
LB5205	J0JCC0000119	FERRITE BEAD	
LB5206	J0JBC0000015	CHIP INDUCTOR	
LB5207	J0JCC0000119	FERRITE BEAD	
LB5208	J0JBC0000015	CHIP INDUCTOR	
LB5209	J0JBC0000015	CHIP INDUCTOR	
LB5210	J0JCC0000119	FERRITE BEAD	
LB5211	J0JCC0000119	FERRITE BEAD	
LB5212	J0JCC0000119	FERRITE BEAD	
LB5213	J0JCC0000119	FERRITE BEAD	
LB5214	J0JHC0000045	CHIP INDUCTOR	
LB5215	J0JCC0000119	FERRITE BEAD	
LB5217	J0JCC0000119	FERRITE BEAD	
LB5219	J0JCC0000119	FERRITE BEAD	
LB5220	J0JBC0000015	CHIP INDUCTOR	
LB5222	ERJ3GEY0R00V	CHIP JUMPER	
LB5228	J0JBC0000015	CHIP INDUCTOR	
LB5229	J0JBC0000015	CHIP INDUCTOR	
LB5230	J0JBC0000015	CHIP INDUCTOR	
LB5231	J0JHC0000045	CHIP INDUCTOR	

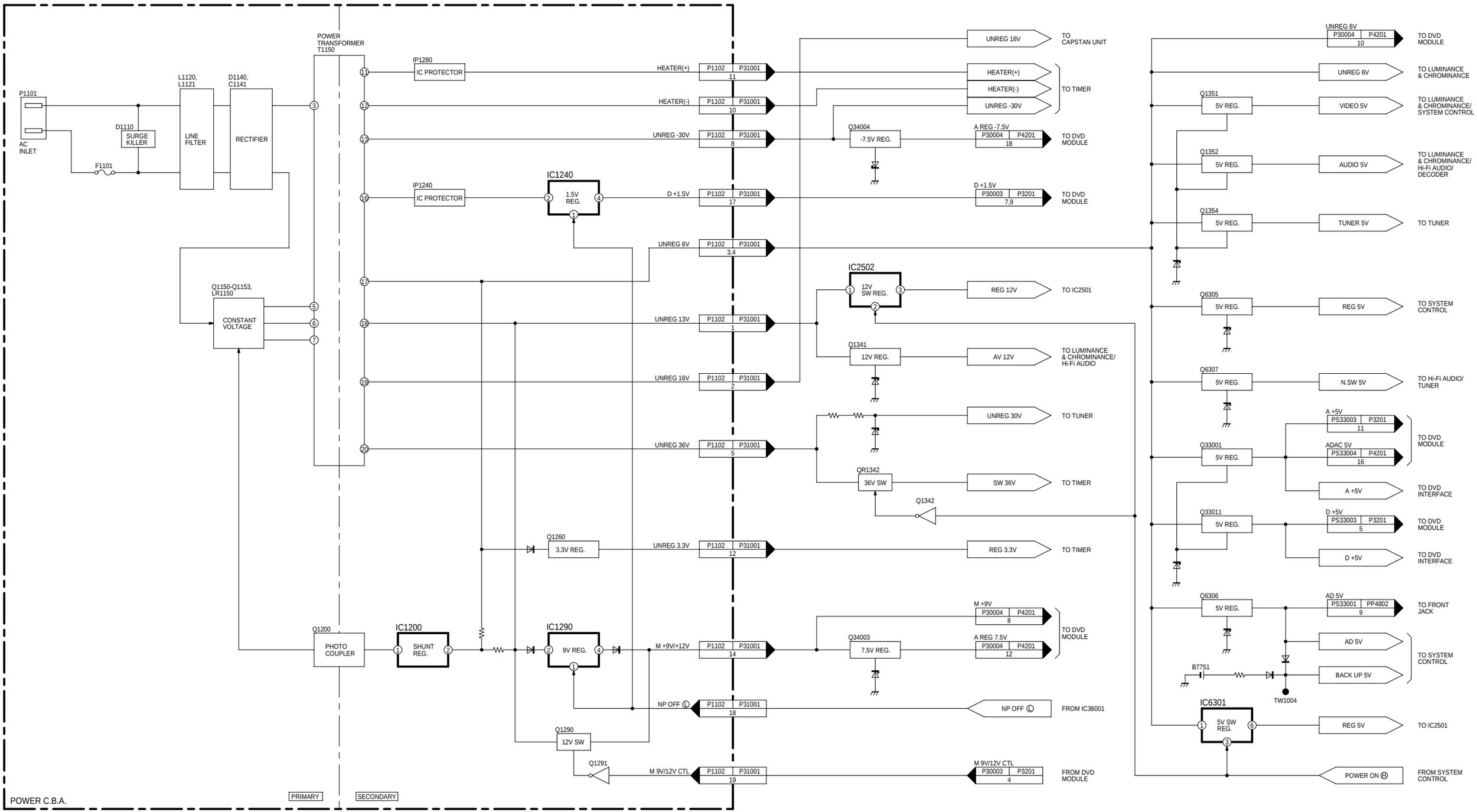
Ref. No.	Part No.	Part Name & Description	Remarks
LB5232	J0JBC0000015	CHIP INDUCTOR	
LB5233	J0JHC0000045	CHIP INDUCTOR	
LB5234	J0JBC0000015	CHIP INDUCTOR	
LB5235	J0JBC0000015	CHIP INDUCTOR	
LB6301	J0JHC0000045	CHIP INDUCTOR	
LB6561	J0JBC0000015	CHIP INDUCTOR	
LB6562	J0JCC0000167	CHIP INDUCTOR	
LB6564	J0JCC0000077	CHIP INDUCTOR	
LB6566	J0JBC0000015	CHIP INDUCTOR	
LB6567	J0JCC0000119	FERRITE BEAD	
P3201	K1KA18B00037	CONNECTOR	
P4201	K1KA18B00037	CONNECTOR	
PS6203	K1MN10A00030	10P FLT CONNECTOR	
Q4302	2SD0601AHL	CHIP TRANSISTOR	
Q5211	UNR212100L	CHIP TRANISTOR	
Q5221	2SD1819A0L	CHIP TRANSISTOR	
Q5225	2SD1819A0L	CHIP TRANSISTOR	
QR2045	UNR511M00L	CHIP TRANSISTOR	
QR4301	UNR521100L	DIGE TRANSISTOR	
QR4302	XN0431100L	CHIP TRANSISTOR	
R2011	J0JBC0000015	CHIP INDUCTOR	
R2012	ERJ3GEYJ752V	THICK FILM CHIP RESISTOR	
R2013	J0JBC0000015	CHIP INDUCTOR	
R2014	ERJ3GEYJ752V	THICK FILM CHIP RESISTOR	
R2015	J0JBC0000015	CHIP INDUCTOR	
R2016	ERJ3GEYJ822V	CHIP RESISTOR	
R2017	J0JBC0000015	CHIP INDUCTOR	
R2018	ERJ3GEYJ822V	CHIP RESISTOR	
R2021	ERJ3GEYJ153V	THICK FILM CHIP RESISTOR	
R2022	ERJ3GEYJ103V	CHIP RESISTOR	
R2023	ERJ3GEYJ153V	THICK FILM CHIP RESISTOR	
R2031	ERJ3GEYJ683V	CHIP RESISTOR	
R2032	ERJ3GEYJ102V	CHIP RESISTOR	
R2033	ERJ3RBD153V	CHIP RESISTOR	
R2041	ERJ3GEYJ473V	CHIP RESISTOR	
R2045	D0GB823JA002	CHIP RESISTOR	
R2046	ERJ3GEYJ221V	CHIP RESISTOR	
R2051	ERJ3RBD392V	CHIP RESISTOR	
R3001	J0JCC0000119	FERRITE BEAD	
R3002	ERJ3GEYJ103V	CHIP RESISTOR	
R3003	ERJ3GEYJ103V	CHIP RESISTOR	
R3012	ERJ3GEYJ473V	CHIP RESISTOR	
R3013	ERJ3GEY0R00V	CHIP JUMPER	
R3041	ERJ3GEYJ101V	CHIP RESISTOR	
R3043	ERJ3GEYJ101V	CHIP RESISTOR	
R3101	ERJ3RBD153V	CHIP RESISTOR	
R3102	ERJ3RBD272V	CHIP RESISTOR	
R3103	ERJ3RBD203V	CHIP RESISTOR	
R3104	ERJ3RBD222V	CHIP RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
R3105	ERJ3RBD152V	CHIP RESISTOR	
R3111	ERJ3RED620V	CHIP RESISTOR	
R3112	ERJ3RED150V	CHIP RESISTOR	
R3116	ERJ3RED620V	CHIP RESISTOR	
R3117	ERJ3RED150V	CHIP RESISTOR	
R3121	ERJ3RBD101V	CHIP RESISTOR	
R3122	ERJ3RED160V	CHIP RESISTOR	
R3126	ERJ3RED560V	CHIP RESISTOR	
R3131	ERJ3RED560V	CHIP RESISTOR	
R4201	D0GB470JA008	RESISTOR	
R4301	ERJ3GEYJ222V	CHIP RESISTOR	
R4302	ERJ3GEYJ222V	CHIP RESISTOR	
R4304	ERJ3GEYJ222V	CHIP RESISTOR	
R4305	ERJ3GEYJ222V	CHIP RESISTOR	
R4313	ERJ3GEYJ223V	CHIP RESISTOR	
R4329	ERJ3GEYJ104V	CHIP RESISTOR	
R4330	ERJ3GEYJ104V	CHIP RESISTOR	
R4331	D0GB562JA008	RESISTOR	
R4332	D0GB562JA008	RESISTOR	
R4352	ERJ3GEYJ123V	CHIP RESISTOR	
R4353	ERJ3GEYJ123V	CHIP RESISTOR	
R4355	ERJ3GEYJ123V	CHIP RESISTOR	
R4356	ERJ3GEYJ123V	CHIP RESISTOR	
R4362	ERJ3GEYJ103V	CHIP RESISTOR	
R5201	ERJ3GEY0R00V	CHIP JUMPER	
R5202	ERJ3GEY0R00V	CHIP JUMPER	
R5221	ERJ3GEY0R00V	CHIP JUMPER	
R5222	ERJ3GEYJ102V	CHIP RESISTOR	
R5223	ERJ3GEYJ331V	CHIP RESISTOR	
R5225	ERJ3GEY0R00V	CHIP JUMPER	
R5226	ERJ3GEYJ102V	CHIP RESISTOR	
R5227	ERJ3GEYJ331V	CHIP RESISTOR	
R5231	J0JCC0000119	FERRITE BEAD	
R5232	J0JCC0000119	FERRITE BEAD	
R5233	ERJ3GEYJ222V	CHIP RESISTOR	
R5234	ERJ3GEYJ222V	CHIP RESISTOR	
R6201	ERJ3GEYJ472V	CHIP RESISTOR	
R6261	ERJ3GEYJ103V	CHIP RESISTOR	
R6311	ERJ3GEYJ103V	CHIP RESISTOR	
R6312	ERJ3GEYJ103V	CHIP RESISTOR	
R6317	EXB28VR000X	CHIP RESISTOR	
R6318	EXB28VR000X	CHIP RESISTOR	
R6351	ERJ3GEYJ101V	CHIP RESISTOR	
R6562	ERJ3GEYJ471V	CHIP RESISTOR	
R6563	ERJ3GEYJ103V	CHIP RESISTOR	
R6564	ERJ3GEYJ100V	CHIP RESISTOR	
R6565	D0GB470JA008	RESISTOR	
RA2025	EXB24V473JX	CHIP RESISTOR	
RA3001	EXB28V820JX	CHIP RESISTOR	
RA3002	EXB28V820JX	CHIP RESISTOR	
RA3003	EXB28V820JX	CHIP RESISTOR	
RA3004	EXB28V820JX	CHIP RESISTOR	
RA3005	EXB24V220JX	CHIP RESISTOR	

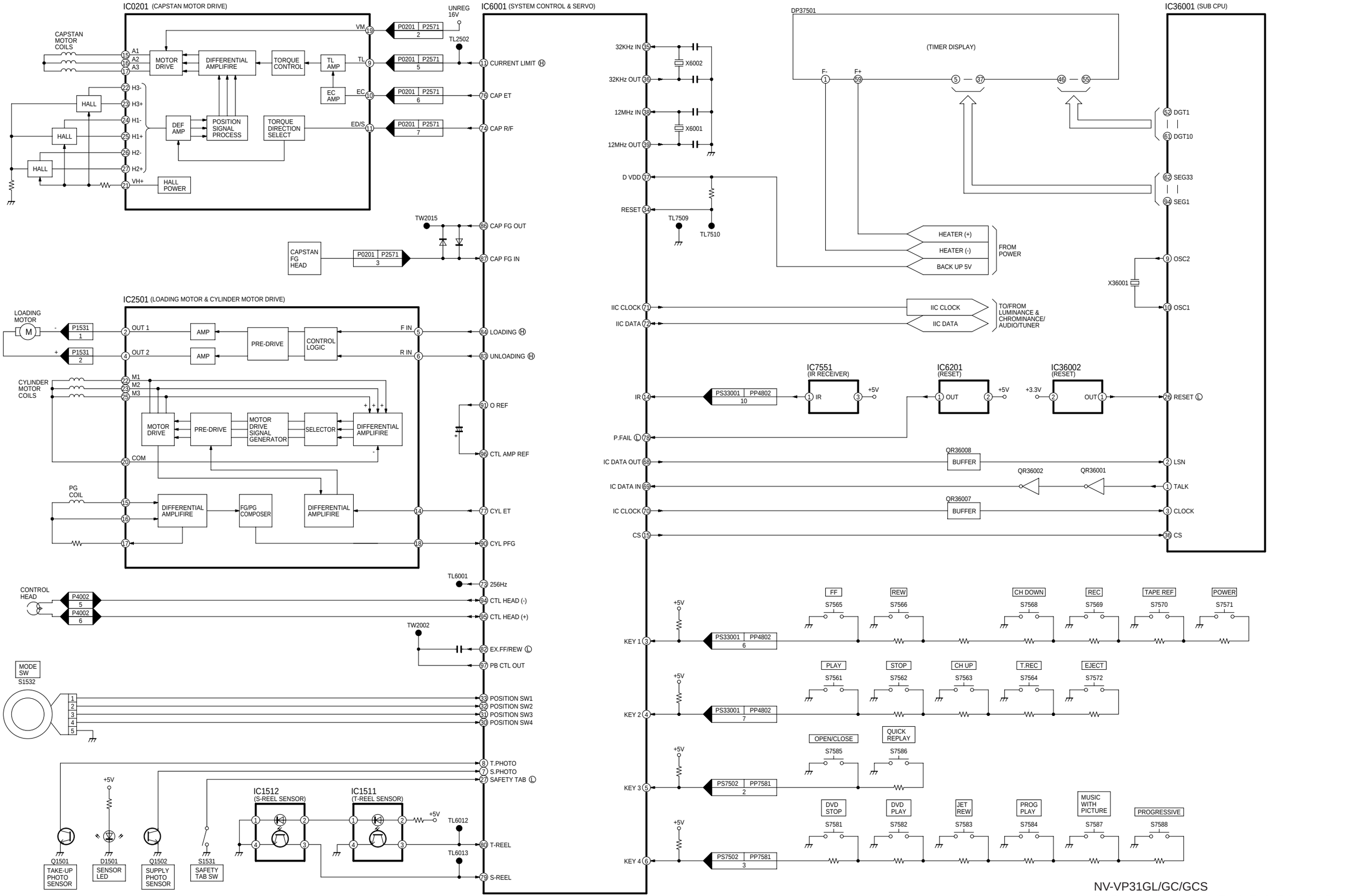
Ref. No.	Part No.	Part Name & Description	Remarks
RA3009	EXB28V820JX	CHIP RESISTOR	
RA3010	EXB28V820JX	CHIP RESISTOR	
RA3011	EXB28V820JX	CHIP RESISTOR	
RA3012	EXB28V820JX	CHIP RESISTOR	
RA3025	EXB24V472JX	CHIP RESISTOR	
RA3042	EXB24V101JX	CHIP RESISTOR	
RA6201	EXB24V472JX	CHIP RESISTOR	
RA6261	EXB24V103JX	CHIP RESISTOR	
RA6315	EXB28VR000X	CHIP RESISTOR	
RA6316	EXB28VR000X	CHIP RESISTOR	
RA6351	EXB24V472JX	CHIP RESISTOR	
X6501	H0J368600003	CRYSTAL OSC	
	REP3406A-1N	TRAVERSE C.B.A.	(RTL)
C2501	EEVFC0J221P	E-CAP	
C2502	ECEV1CA101WP	CHIP CAPACITOR	
C2503	ECEV1CA220WR	CHIP CAPACITOR	
C2504	F1H1C104A090	E-CAP	
C2505	F1H1C104A090	E-CAP	
C2506	F1H1C104A090	E-CAP	
C2507	F1H1C104A090	E-CAP	
C2508	F1H1C104A090	E-CAP	
C2509	EEVFC1C100R	E-CAP	
C2510	F1H1C104A090	E-CAP	
C2511	F1H1C104A090	E-CAP	
C2512	F1H1C104A090	E-CAP	
C2513	F1H1C104A090	E-CAP	
C5101	EEVHB1C100R	CAPACITOR	
C5102	F1H1C104A090	E-CAP	
C5103	F1H1C104A090	E-CAP	
C5111	EEVHB0J470R	CAPACITOR	
C5115	EEVHB0J470R	CAPACITOR	
C5123	F1H1C104A090	E-CAP	
C5151	F1H1C104A090	E-CAP	
C5152	VCS1AS106R	CAPACITOR	
D5151	MA2J72800L	DIODE	
FP2501	K1MN04B00036	CONNECTOR	
FP5101	K1MN30B00098	CONNECTOR	
FP5102	K1MN50B00010	CONNECTOR	
IC2501	C0GBG0000033	IC	
L5101	ELJEA100KF	COIL	
LB5101	J0JHC0000045	COIL	
LB5105	J0JBC0000015	COIL	
LB5106	J0JBC0000015	COIL	
Q5111	B1BDBF000004	CHIP TRANSISTOR	
Q5115	B1BDBF000004	CHIP TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
R2501	ERJ3GEYJ101V	RESISTOR	
R2502	ERJ3GEYJ153V	RESISTOR	
R2503	ERJ3GEYJ153V	RESISTOR	
R2504	ERJ3GEYJ823V	CHIP RESISTOR	
R2505	ERJ3GEYJ823V	CHIP RESISTOR	
R2507	ERJ6GEYJ6R8V	CHIP RESISTOR	
R5101	ERJ3GEYJ560V	CHIP RESISTOR	
R5102	ERJ3GEYJ560V	CHIP RESISTOR	
R5103	ERJ3GEYJ560V	CHIP RESISTOR	
R5105	ERJ12Y0R00U	RESISTOR	
R5107	ERJ3GEY0R00V	RESISTOR	
R5108	ERJ3GEY0R00V	RESISTOR	
R5109	ERJ3GEY0R00V	RESISTOR	
R5111	ERJ3GEYJ2R2V	CHIP RESISTOR	
R5112	ERJ12YJ270H	CHIP RESISTOR	
R5113	ERJ3GEYJ473V	RESISTOR	
R5114	ERJ3GEYJ223V	RESISTOR	
R5115	ERJ3GEYJ2R2V	CHIP RESISTOR	
R5116	ERJ12YJ270H	CHIP RESISTOR	
R5117	ERJ3GEYJ473V	RESISTOR	
R5120	ERJ3GEY0R00V	RESISTOR	
R5121	ERJ3GEYJ560V	CHIP RESISTOR	
R5122	ERJ3GEYJ560V	CHIP RESISTOR	
R5123	ERJ3GEYJ560V	CHIP RESISTOR	
R5124	ERJ3GEYJ472V	RESISTOR	
R5152	ERJ3GEYJ102V	RESISTOR	
RA2501	EXBV8V473JV	RESISTOR	
RA5101	EXBV4V560JV	RESISTOR	
RA5102	EXBV8V560JV	LOAD	
RA5103	EXBV4V560JV	LOAD	
SW2501	RSH1A048-A	SWITCH	
	REP3383A	FG UNIT	(RTL)
		MISCELLANEOUS	
	CNB13030R2AU	PHOTO INTERRUPTOR	
	RJB2588A	FG FPC	

20. Schematic Diagram for printing with A4



NV-VP31GL/GC/GCS
POWER BLOCK DIAGRAM



NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO BLOCK DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

IC3001 (AUDIO/VIDEO SIGNAL PROCESSOR)

FROM TUNER
TUNER VIDEO

FROM DVD INTERFACE
DVD VIDEO IN

AV2 IN
JK4801
(FRONT JACK)
VIDEO IN

PP4802 PS33001 1

ATT -6dB
ATT -4dB
ATT -10dB
ATT -10dB
ATT -10dB

VIDEO AGC

SVHS
SVHS
ATP

HPF

2MHz LPF
ACC

FIXED TO INT IN THES MODELS BY PIN53
EXT
INT

CLEAR SYNC

FEED BACK CLAMP
VIDEO ALC

SQUELCH

NTSC/PAL CONVERTER

COLOUR KILLER

EXT
INT
6dB AMP
C-SQUELCH

V-AMP

IC6001
OSD SIGNAL PROCESS

Q3001
BUFFER

Q7701
BUFFER
L7702, C7714
BPF
(GC/GCS)

MAIN CONV 2
MAIN CONV 1

C LPF2

VCA

C CCD

CCD LPF

PILOT ADD

BPF

B.D

PILOT ERASE

4.43PAL → MPAL CONV DELAY

C LPF1

IC3703
DVD VIDEO OUT
DVD OUT Ⓗ

AV1 IN
VHS/DVD OUT
JK33001
(REAR JACK)
VIDEO OUT

TL3711
Q3702
AMP

TL3712
VIDEO IN

TO TUNER
RFC VIDEO OUT

GCL
GCL
LPF
Y-CCD DELAY

GCL
Y-LPF
SECAM DELAY +SSEQ
SVHS+L SECAM
SVHS+L SECAM

NON-LINEAR DE-EMPHASIS

SQPB
SQPB
SQPB EQ

R(SVHS)
R(SVHS)
DO/REC
DO

Y-NOISE REDUCTION

HP-NC TRAP-NC

PHASE COMPARATOR

DEH

NON-LINEAR EMPHASIS

ET LPF

REC FBC+ALC PB AGC+APL

APC SW
PB APC
KILLER
REC APC
ACC SW
ACC DET
CHROMA ACC DET

L3001, C3007
PEAKING FILTER

MAIN DE-EMPHASIS

MAIN EMPHASIS CARRIER OFFSET W.C/D.C

fo/DEVIATION ADJUSTMENT

FM MODULATION

REC FILTER

SUB LPF
DEMO
DLIM
G-EQ

X3001
X3002
X'TAL VCO OSCILLATOR
2FSC

C CLOCK DRIVER
TO C CCD

SQPB
SQPB
SQPB DL
P-EQ
FM AGC
629MHz TRAP

INT
EXT

EXTERNAL PB LUMINANCE SIGNAL INPUT LINE
(NOT USED IN THESE MODELS)

TO SYSTEM CONTROL
S-VHS PB Ⓗ

S-VHS DET

B.E

MIX LEVEL ADJUST

CHROMA ACC
C-ACC:ON
THROUGH

L SECAM
L SECAM

fh HPF CTL TRAP

COLOUR KILLER

REC TRAP/ Hi-Fi TRAP

C-DELAY

NO FREC TRAP
FREC TRAP

L SECAM
L SECAM
LPF

REC MUTE
VCA

SP
SP

SP2
SP2
CH2
CH1
SP1
SP1

SP L
SP COM
SP R

P5001 6
P5001 5
P5001 4

TO/FROM DD CYLINDER VIDEO HEAD

SP2
SP2
CH2
CH1
SP1
SP1

LP/EP L
LP/EP COM
LP/EP R

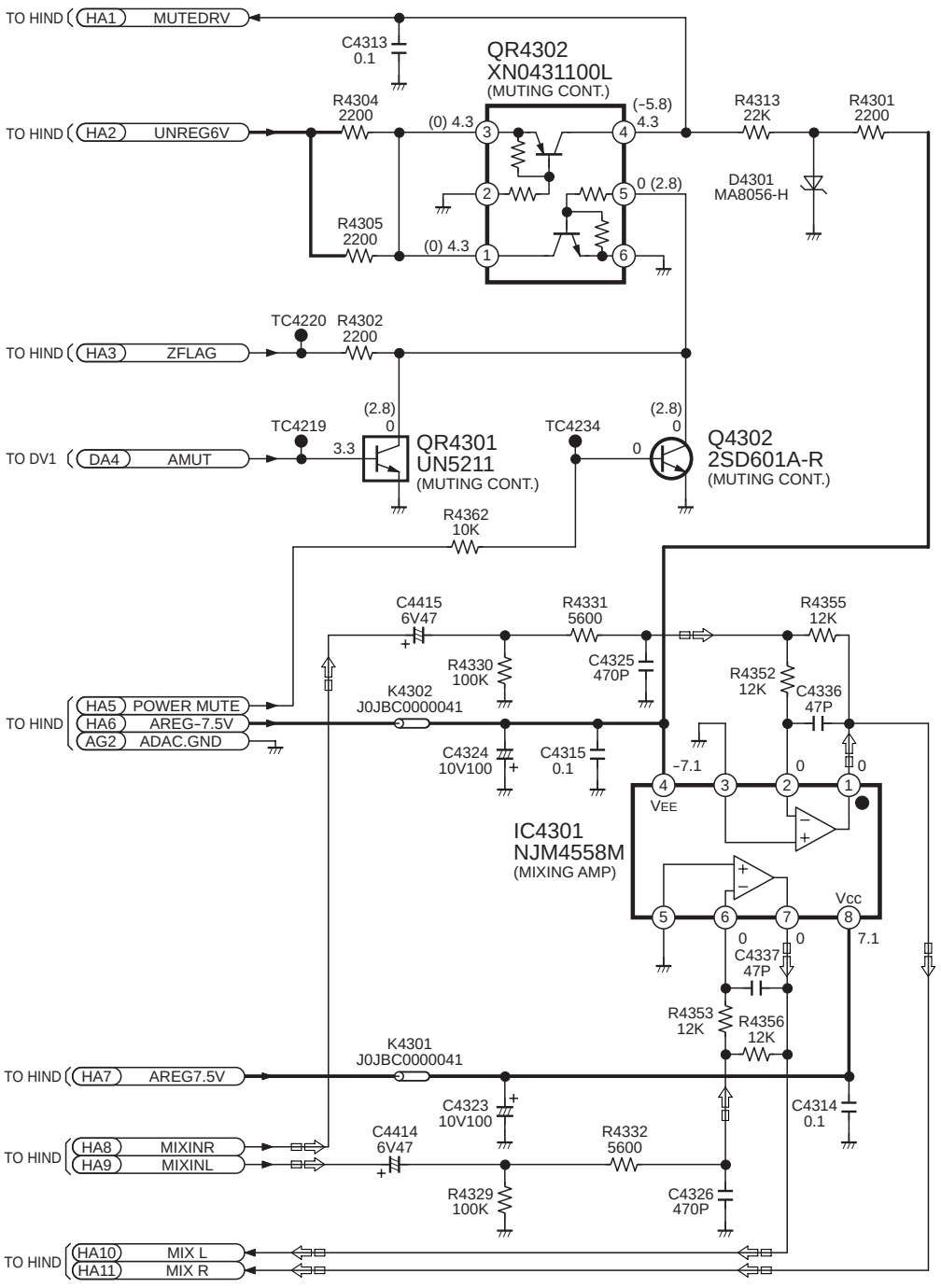
P5001 3
P5001 2
P5001 1

TO/FROM DD CYLINDER VIDEO HEAD

TO/FROM SYSTEM CONTROL
IIC CLOCK
IIC DATA

NV-VP31GL/GC/GCS
LUMINANCE & CHROMINANCE BLOCK DIAGRAM

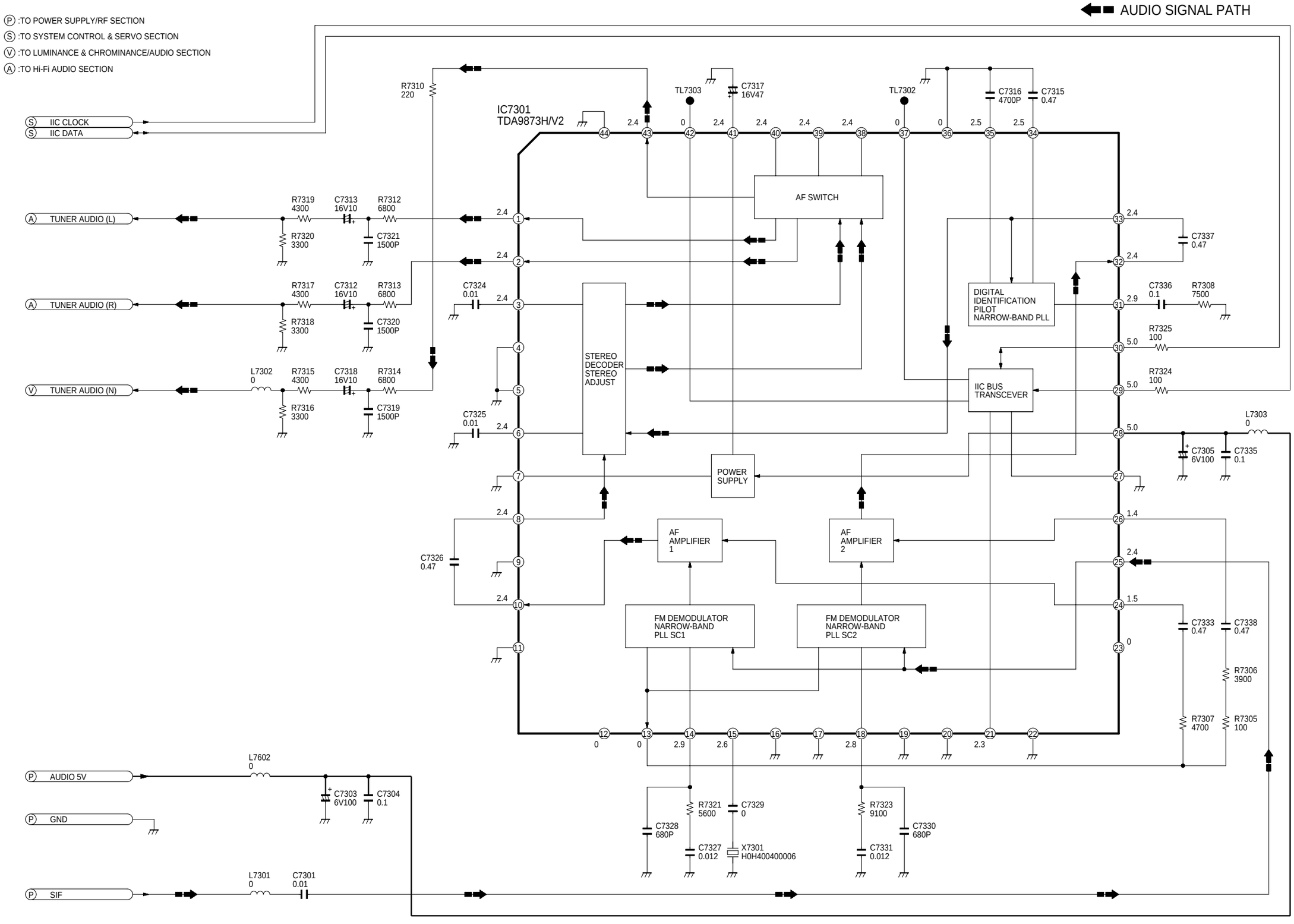
AUDIO MAIN SIGNAL



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE
IN THE BRACKETS( )ON THIS DIAGRAM IS PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE
OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS
SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU
ORDER A PART,PLEASE REFER TO PARTS LIST.

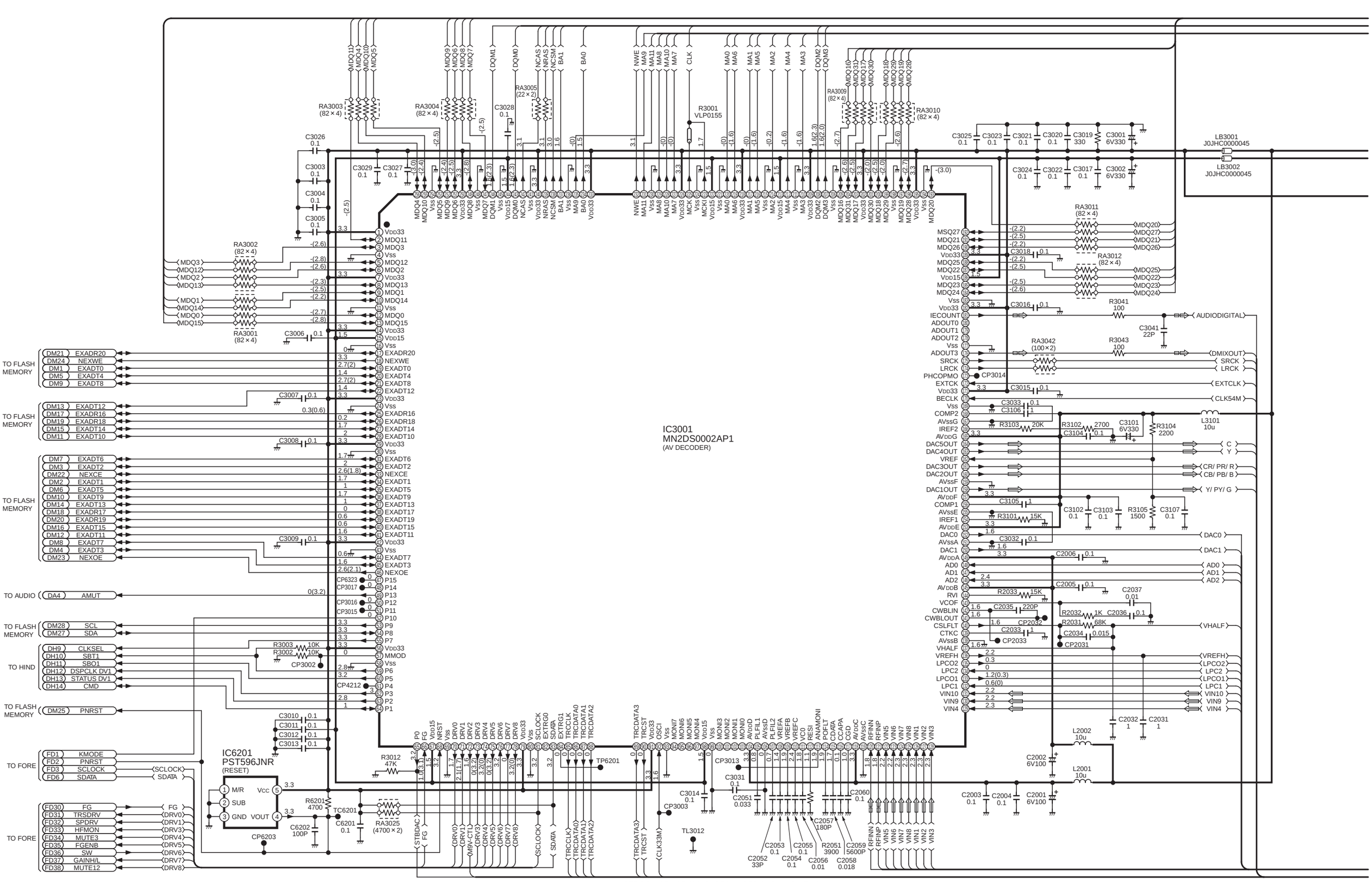
NV-VP31GL/GC/GCS
AUDIO SECTION SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL
DECODER SECTION SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS DVD PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
DV1 SECTION SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL

AUDIO MAIN SIGNAL

IC3051
C3ABPJ000052
(64M SDRAM)

C3052 0.1
C3051 0.1
C3053 0.1
C3054 0.1
C3055 0.1
C3056 0.1
C3057 0.1
C3058 0.1
C3059 0.1
C3060 0.1
C3061 0.1
C3062 0.1

	3.3	1	Vcc	Vss	86		
MDQ0	-(2.7)	2	DQ0	DQ15	85	-(2.7)	MDQ15
	3.3	3	VccQ	VssQ	84		
MDQ1	-(2.5)	4	DQ1	DQ14	83	-(2.2)	MDQ14
MDQ2	-(2.5)	5	DQ2	DQ13	82	-(2.2)	MDQ13
		6	VssQ	VccQ	81	3.3	C3062 0.1
MDQ3	-(2.5)	7	DQ3	DQ12	80	-(2.8)	MDQ12
MDQ4	-(3.0)	8	DQ4	DQ11	79	-(2.5)	MDQ11
	3.3	9	VccQ	VssQ	78		
MDQ5	-(2.5)	10	DQ5	DQ10	77	-(2.4)	MDQ10
MDQ6	-(2.5)	11	DQ6	DQ9	76	-(2.4)	MDQ9
		12	VssQ	VccQ	75	3.3	C3061 0.1
MDQ7	-(2.5)	13	DQ7	DQ8	74	-(2.8)	MDQ8
		14	NC	NC	73		
		15	Vcc	Vss	72		
DQM0	1.6(2.3)	16	DQM0	DQM1	71	1.6(2.3)	DQM1
NWE	3.1	17	WE	NC	70		
NCAS	3.1	18	CAS	NC	69		
NRAS	3.1	19	RAS	CLK	68	1.7	CLK
NCSM	3.0	20	CS	CKE	67		
MA11		21	NC	A9	66	-(0)	MA9
BA0	1.5	22	BS0	A8	65	-(0)	MA8
BA1	1.6	23	BS1	A7	64	-(0)	MA7
MA10	-(0)	24	A10/AP	A6	63	-(1.6)	MA6
MA0	-(0)	25	A0	A5	62	-(1.6)	MA5
MA1	-(0)	26	A1	A4	61	-(1.6)	MA4
MA2	-(0.2)	27	A2	A3	60	-(1.6)	MA3
DQM2	1.6(2.3)	28	DQM2	DQM3	59	1.6(2.0)	DQM3
	3.3	29	Vcc	Vss	58		
		30	NC	NC	57		
MDQ16	-(2.7)	31	DQ16	DQ31	56	-(2.6)	MDQ31
		32	VssQ	VccQ	55	3.3	C3060 0.1
MDQ17	-(2.5)	33	DQ17	DQ30	54	-(2.0)	MDQ30
MDQ18	-(2.5)	34	DQ18	DQ29	53	-(2.0)	MDQ29
	3.3	35	VccQ	VssQ	52		
MDQ19	-(2.6)	36	DQ19	DQ28	51	-(2.7)	MDQ28
MDQ20	-(3.0)	37	DQ20	DQ27	50	-(2.2)	MDQ27
		38	VssQ	VccQ	49	3.3	C3059 0.1
MDQ21	-(2.5)	39	DQ21	DQ26	48	-(2.2)	MDQ26
MDQ22	-(2.5)	40	DQ22	DQ25	47	-(2.2)	MDQ25
	3.3	41	VccQ	VssQ	46		
MDQ23	-(2.5)	42	DQ23	DQ24	45	-(2.6)	MDQ24
	3.3	43	Vcc	Vss	44		

D+3.3V DB1
D+1.5V DB3
D.GND DG1
TO HIND

DAC0 DAC0 FD7
DAC1 DAC1 FD8
AD0 AD0 FD9
AD1 AD1 FD10
AD2 AD2 FD11
VHALF VHALF FD12
VREFH VREFH FD13
LPCO2 LPCO2 FD14
LPC2 LPC2 FD15
LPCO1 LPCO1 FD16
LPC1 LPC1 FD17
TO FORE

VIN10 VIN10 FD18
VIN9 VIN9 FD19
VIN4 VIN4 FD20
VIN3 VIN3 FD21
VIN2 VIN2 FD22
VIN1 VIN1 FD23
VIN8 VIN8 FD24
VIN7 VIN7 FD25
VIN6 VIN6 FD26
VIN5 VIN5 FD27
RFINP RFINP FD28
RFINN RFINN FD29
TO FORE

AUDIODIGITAL AUDIO DIGITAL DH15
DMIXOUT DMIXOUT DH16
SRCK SRCK DH17
LRCK LRCK DH18
EXTCLK EXTCLK DH19
CLK54M CLK54M DH20
TO HIND

R3112 15
R3117 15
R3111 62
R3116 62

C C DH1
Y Y DH2
CR/ PR/ R CR/ PR/ R DH3
CB/ PB/ B CB/ PB/ B DH4
Y/ PY/ G Y/ PY/ G DH5
CLK33M CLK33M DH6
M9V-CTL M9V-CTL DH7
STBDAC STBDAC DH8
TO HIND

R3121 100
R3122 16
R3126 56
R3131 56

CP6211
R3013 0

TRCCLK CP6212
TRCDATA0 CP6213
TRCDATA1 CP6214
TRCDATA2 CP6217
TRCDATA3 CP6218
TRCST CP6219

NV-VP31GL/GC/GCS
DV1 SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER SUPPLY/RF SECTION
Ⓣ :TO TIMER SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓘ :TO DVD INTERFACE SECTION
Ⓓ :TO DECODER SECTION

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

IIC BUS INTERFACE
PNR RCH
PNR LCH
AGC & SWITCH
FM MODULATOR/ DEMODULATOR
LPF
BPF
AGC
PREAMP & SWITCH
SWITCH RCH
SWITCH LCH
OUTPUT SELECT SWITCH RCH
OUTPUT SELECT SWITCH LCH
NORMAL OUTPUT SWITCH
INPUT SWITCH RCH
INPUT SWITCH LCH
DET
IC4501 AN3656NFBPBV
QR4401 UNR521600L (FM MUTE Ⓗ:ON)
QR4404 UNR511300L (BUFFER)
QR4405 UNR521600L (MUTE)
QR4406 UNR521600L (MUTE)
QR4651 UNR521600L (MUTE)

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
Hi-Fi AUDIO SECTION
SCHEMATIC DIAGRAM

MAIN SIGNAL PATH

QR2045
UN511MTX
(POWER SUPPLY)

Q5211
UN2121
(POWER SUPPLY)

Q5225
2SD1819A0L
(LASER POWER DRIVE [CD])

Q5221
2SD1819A0L
(LASER POWER DRIVE [DVD])

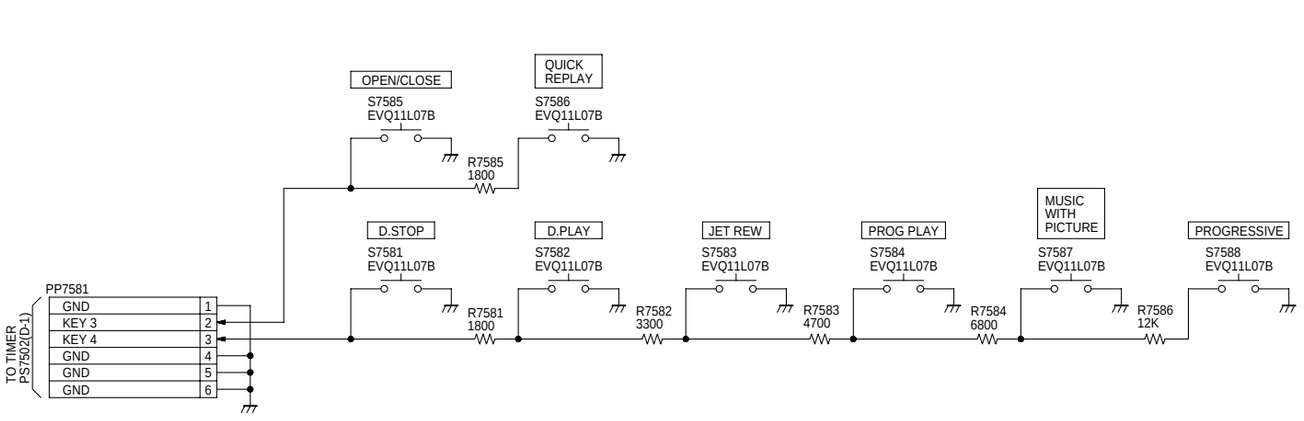
FP5201

TO TRAVERSE FP5102 (E-11)

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS DVD PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
FORE SECTION SCHEMATIC DIAGRAM



NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
FRONT SW SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL

AUDIO MAIN SIGNAL

TO FLASH MEMORY
DB1 D+3.3V
DG1 D.GND

TO FORE
DB1 D+3.3V
DG1 D.GND

TO DV1
DB1 D+3.3V
DB3 D+1.5V
DG1 D.GND

IC6251
C0CBCBE00003
(REGULATOR)
OUT IN VC GND
3.3 4.3 1.3 4.3
C6252 1
C6253 0.01
C6251 0.1
D6251 B0ECKP000002
FL6252 F1H0J1050018
C6255 6V100

IC4201
C0FBBK000035
(AUDIO D/A CONVERTER)
CP4201 CP4211 CP4202
SRCK DMIXOUT LRCK
BCK DATA LRCK D.GND VDD VCC VOUTL VOUTR
SCK ML MC MDI ZEROL ZEROR VCOM AGND
R4201 47
STBDAC SBT1 SBO1
L4211 22u
LB4200 VLP0146
C4204 10V10
C4203 0.1
C4206 6V33
C4208 0.1
K6501 0
MIXL MIXR
ZFLAG
C4201 6V330

R6261 10K
RA6261 (10K × 2)
LB3201 100
LB3202 100
LB3203 100
LB3209 VLP0155
DSP CLK
STATUS
CMD
M9V-CTL

TC6255
TC3205 TC3204 TC3203 TC3202
P3201
1 DSP CLK
2 STATUS
3 CMD
4 M +9V-CTL
5 D+5V
6 D.GND
7 D+1.5V
8 D.GND
9 D+1.5V
10 D.GND
11 A +5V
12 A.GND
13 Y
14 C
15 V.GND
16 CB/ PB
17 CR/ PR
18 Y/ PY
TO DVD INTERFACE (MAIN) P30003(D-1)

D+1.5V
FL6253 F1H0J1050018
TP6256 TP6259 TP6253 TP6254 TP6252
TP6251
TC3206 TC3207
TC3209 TC3208 TC3201
Y C CB/ PB/ B CR/ PR/ R Y/ PY/ G
LB3204 VLP0155
LB3205 VLP0155
LB3207 VLP0155
LB3208 VLP0155
LB3206 VLP0155

D+5V DB2 DGND DG1 TO FORE
FL6254 F1H0J1050018
A+5V AB1 AGND AG1 TO FORE
FL6251 F1J1E1040022
M+9V MB1 MGND MG1 TO FORE
LB4206 LB4205 LB4204 LB4203 LB4202 VLP0146
TRAYREF FH1
TRAYDRV FH2
MUTE4 FH3
TRV-SW+ FH4
TRAY/TRV FH5
TO FORE

IC6561
C1DB00000980
(CLOCK GENERATOR)
L6561 22u
LB6561 VLP0146
C6561 6V33
C6563 0.1
LB6562 J0JCC0000167
L6562 22u
C6562 6V33
C6564 0.1
C6568 15P
TP6561
X6501 (36.864MHz)
R6562 470
C6565 15P
C6566 15P
VDD1 VSS1 CLK54 CLK27 VDD2 VSS2 XTI XTO
CE CLK33 FSEL CLK16 VDD3 VSS3 768fs 384fs
R6563 10K
LB6564 VLP0146
R6564 10
R6565 47
LB6566 VLP0146
LB6567 VLP0155
C6567 0.1
TP6564
TP6563 CLK33M
CLKSEL
TP6565 EXTCLK

TO DV1
DH1 C
DH2 Y
DH3 CR/ PR / R
DH4 CB/ PB / B
DH5 Y/ PY / G
DH6 CLK33M
DH7 M9V-CTL
DH8 STBDAC
CP4205

TO DV1
DH9 CLKSEL
DH10 SBT1
DH11 SBO1
DH12 DSPCLK DV1
DH13 STATUS DV1
DH14 CMD
CP4203 CP4204 CP6262
CP6261 CP6263

TO DV1
DH15 AUDIO DIGITAL
DH16 DMIXOUT
DH17 SRCK
DH18 LRCK
DH19 EXTCLK
DH20 CLK54M

AUDIO DIGITAL
TC4203 TC4204 TC4205 TC4206 TC4207 TC6257
TP6258
TP4232 TP4231 TP4221 TP4216 TC4215 TP4217 TP4230
FL4201 F1H0J1050018
TP4218
P4201
1 ADIGITAL
2 D.GND
3 TRAY/TAV
4 TRV-SW+
5 TRAYMUT
6 TRAYDRV
7 TRAYREF
8 M+9V/+12V
9 M GND
10 UNREG6V
11 MUTEDRV
12 AREG7.5V
13 MIX L
14 GND(ADAC)
15 MIX R
16 ADAC5V
17 POWER MUTE
18 AREG -7.5V
TO DVD INTERFACE (MAIN) P30004(C-1)
LB4201 VLP0155 TC4201 TC4202

LB4220 VLP0146
LB4216 VLP0146
ADAC.GND AG2
AREG-7.5V HA6
POWER MUTE HA5
TO AUDIO

LB4215 LB4214 LB4218 LB4221 LB4222 VLP0155 VLP0146
MIX R HA11
MIX L HA10
AREG7.5V HA7
MUTEDRV HA1
UNREG6V HA2
TO AUDIO

ZFLAG HA3
MIXL HA9
MIXR HA8

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS DVD PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
HIND SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER SUPPLY/RF SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION

VCR VIDEO MAIN SIGNAL PATH IN REC MODE
VCR AUDIO MAIN SIGNAL PATH IN REC MODE
DVD VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
DVD AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

T WIDE
P A +5V
P D +1.5V
T DSP CLOCK
T STATUS
T CMD
P M 9V/12V CTL
T TRAY/TRV
T TRV SW+
T TRAY MUTE
T TRAY DRV
T TRAY REF
T POWER MUTE

P30003 TO DVD MODULE (HIND) P3201 (G-11)
DSP CLOCK, STATUS, CMD, M 9V/12V CTL, D +5V, GND (D), D +1.5V, GND (D), D +1.5V, GND (D), A +5V, GND (A), Y, C, GND (V), PB/CB, PR/CR, PY/Y

P30004 TO DVD MODULE (HIND) P4201 (C-11)
DIGITAL AUDIO, GND (D), TRAY/TRV, TRV SW+, TRAY DRV, TRAY REF, M +9V/+12V, GND (M), UNREG 6V, MUTE DRV, A REG 7.5V, AUDIO MIX (L), GND (ADAC), AUDIO MIX (R), ADAC 5V, POWER MUTE, A REG -7.5V

P UNREG 6V
P D +5V
P M +9V/+12V
P UNREG -30V
P GND

QR33001 UNR521200L (SWITCHING)
IC33501 MM1568BJBE
IC34372 K7AABA000001 (DIGITAL AUDIO OUT)
Q34003 2SD601A (7.5V REG.)
Q34004 2SB709A (-7.5V REG.)
QR34410 UN5215 (MUTE)
QR34419 UN5215 (MUTE)

DVD OUT JK34301 K2HA609B004
DVD S VIDEO OUT JK34302 K2HZ105B0007

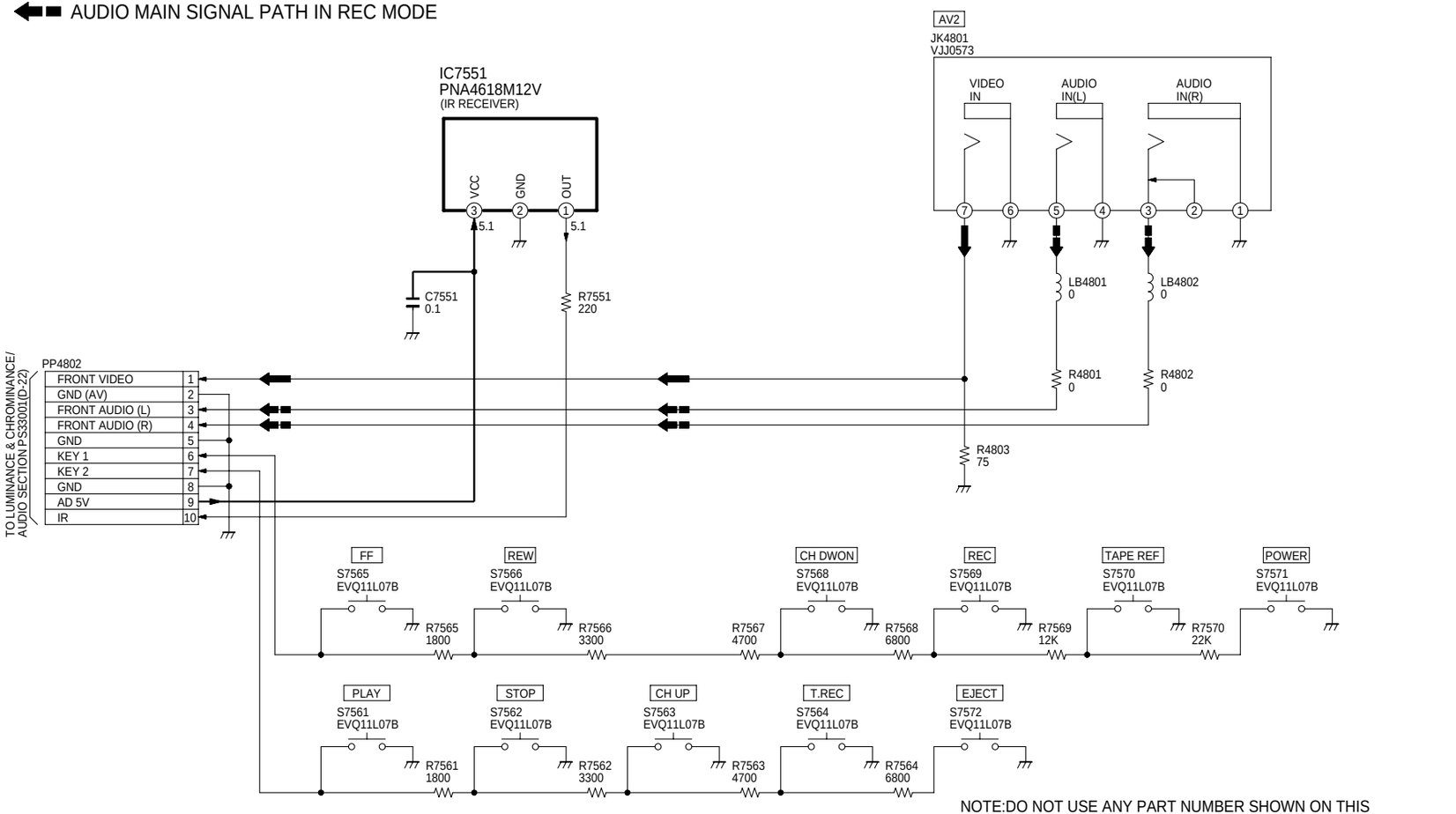
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
DVD INTERFACE SECTION SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

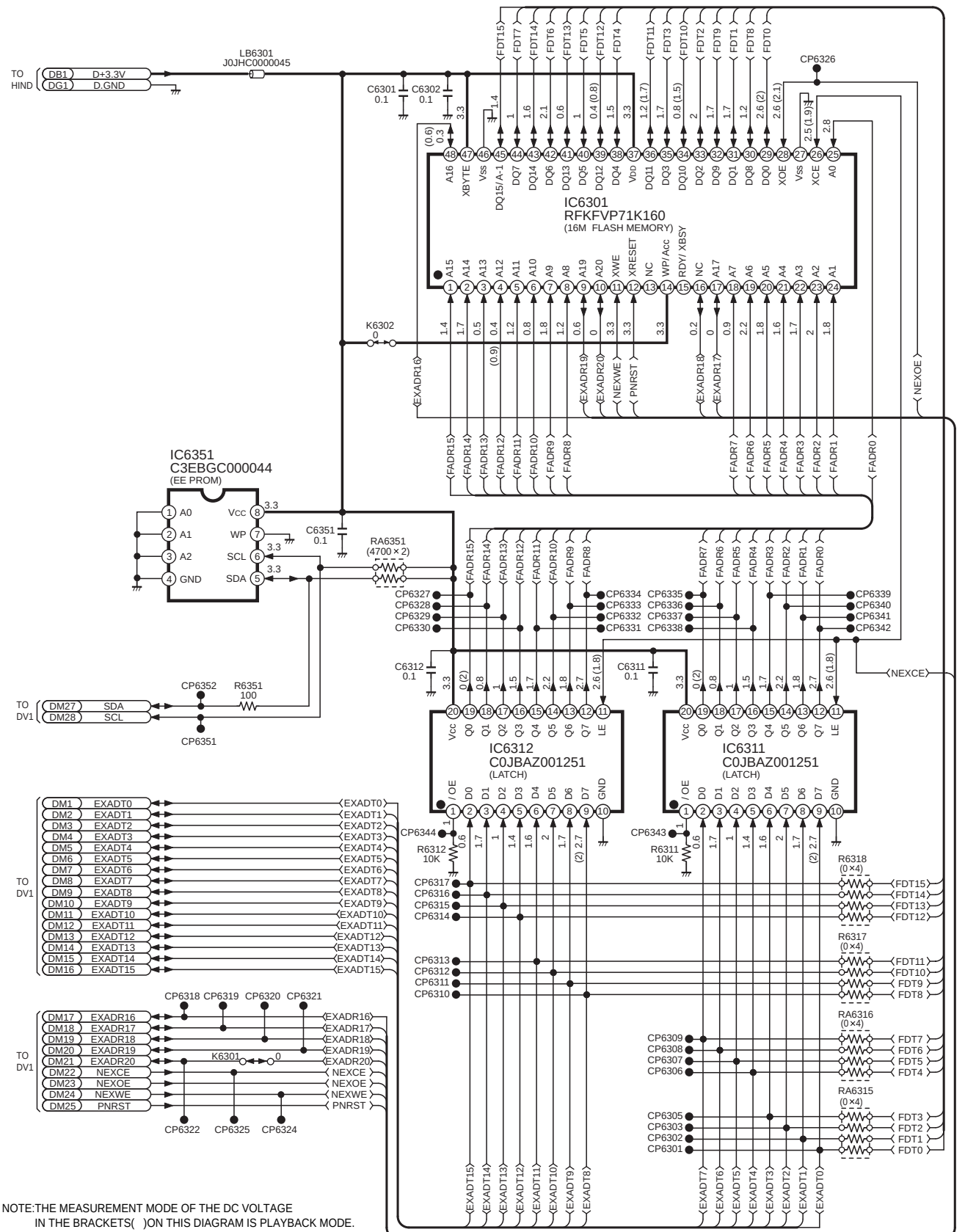
AUDIO MAIN SIGNAL PATH IN REC MODE



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE TO PARTS LIST.

NV-VP31GL/GC/GCS
FRONT JACK SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE
IN THE BRACKETS( )ON THIS DIAGRAM IS PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE
OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
FLASH MEMORY SECTION SCHEMATIC DIAGRAM

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.

PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

HOT

P1101 K2AA2H000007 AC INLET

D1110 ERZVA5V471

F1101 K5D162BL0007

LB1214 0

C1122 330P

L1120 ELF15N005A

L1121 ELF15N005A

C1125 0.068

D1140 DF08S-6622

LB1216 0

C1141 400V68

LB1217 0

T1150 G4D2A0000159

Q1153 B1EDEQ000014 (VOLTAGE CONTROL)

R1162 1K

R1163 100

C1155 270P

C1210 3300P

R1150 1M

R1154 1M

LR1150 J1ZZA0000004

LB1218 0

C1124 1000P

Q1150 B1EDEDR000003 (VOLTAGE CONTROL)

R1155 100K

C1154 0.022

R1153 330

D1210 B0HA/GM000006

R1161 100

Q1152 2SC3311A (VOLTAGE CONTROL)

R1160 0.22

Q1151 2SD1992A (VOLTAGE CONTROL)

R1157 5600

D1157 MAZ40360MF

C1151 0.022

D1155 MA165

C1153 0.1

R1159 3.3

R1158 330

D1152 MA185

C1152 0.01

Q1200 B3PBA0000078

R1156 33

R1205 2200

R1206 270

D1230 MA185

C1230 50V22

D1180 MAZ751000C

R1230 47K

D1250 B0JAMK000015

D1251 B0JAMK000015

L1250 22u

C1250 25V680

C1251 25V100

D1290 B0JAMK000015

D1295 B0JAMK000015

L1290 22u

C1290 16V680

C1291 16V100

IP1240 K5G252AA0003

D1240 B0JAME000025

D1241 B0JAME000025

L1240 22u

C1240 10V1000

C1241 10V220

D1261 B0JAPE000008

L1260 10u

C1261 10V330

C1260 10V1000

C1262 10V1000

D1270 MA185

C1270 50V22

C1280 16V470

IP1280 K5G252AA0003

D1280 B0JAME000025

R1209 10K

QR1201 UN2211 (NP OFF:ON)

QR1202 UN2211 (INV.)

IC1240 C0DBEKG00003 (1.5V SWITCHING REG.)

VC ADJ V OUT V IN GND

R1242 8200

R1241 39K

R1240 22K

C1242 16V220

Q1260 2SD601A (3.3V REG.)

D1264 MA165

D1263 MA165

D1262 MA165

C1263 0.1

R1260 2700

C1264 6V47

D1265 5600

IC1200 C0DAEJC00003

C1200 0.1

R1204 12K

R1207 8200

R1208 56K

R1200 33K

R1201 33K

R1202 2200

R1203 22K

D1291 B0AAML000002

D1292 B0AAML000002

D1293 B0AAML000002

Q1290 2SB14170PA (12V SUPPLY ON)

R1290 330

C1295 16V220

R1291 680

Q1291 2SD601A (SWITCHING)

D1294 B0JAME000025

IC1290 C0DBZHG00013 (SWITCHING REG.)

R1292 2200

R1293 150

P1102

1	UNREG 13V
2	UNREG 16V
3	UNREG 6V
4	UNREG 6V
5	UNREG 36V
6	
7	GND
8	UNREG -30V
9	GND
10	HEATER (-)
11	HEATER (+)
12	REG 3.3V
13	TRAY SW
14	M +9V
15	GND (MOTOR)
16	GND (D)
17	D +1.5V
18	NP OFF Ⓛ
19	M9V/12V CTL

TO POWER SUPPLY/RF SECTION P3100(E-1)

P1103 (TO TRAY SW)

1	TRAY SW
2	GND(D)

NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚

NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.
NOTE:THE MEASURMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NV-VP31GL/GC/GCS
POWER SCHEMATIC DIAGRAM

Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION
Ⓘ :TO DVD INTERFACE SECTION
Ⓓ :TO DECODER SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

TU7601
ENG57820G1:GL
ENG57818G1:GC/GCS

1 N.SW 5V
2 AUDIO OUT
3 DATA
4 N.SW 5V
5 CLOCK
6 VIDEO OUT
7
8
9
10 GND
11 CLOCK
12 DATA
13
14 N.SW 5V
15
16 UNREG 30V
17 IF OUT
18 IF IN
19 SW1
20 SW2
21 A COMPO
22 SIF
23 AFC S-CURVE
24 TUNER VIDEO
25 TUNER 5V

L7609 10u
C7618 6V47
C7619 0.01
L7605 10u
C7616 6V47
R7613 0
R7612 0
L7608 27u
LB7601 J0JBC0000015
LB7605 0
C7610 1000P
R7606 J0JCC0000124
R7607 J0JCC0000124
L7601 10u
C7605 6V47
C7608 0.01
R7611 330
R7601 330
C7601 50V1
D7602 MA4300NM
C7622 470P
C7621 470P
(GC/GCS)
L7603 0
C7603 0.01

QR1342 UN2112 (POWER ON:ON)
Q1342 2SD601A (POWER ON Ⓗ:ON)
R1342 100K
Q1354 2SC1959Y (5V REG.)
Q1352 2SC1959Y (5V REG.)
Q1351 2SC1959Y (5V REG.)
Q1341 2SC1959Y (12V REG.)
R1351 470
C1351 0.01
C1352 10V47
D1351 MA4056NH
C1341 0.01
C1342 50V4.7
D1341 MA4130NL
R1341 10K
Q33001 2SC1959Y (5V REG.)
C33014 10V220
Q33011 2SC3940A (5V REG.)
C33001 0.01
R33001 270
C33015 10V220
D33001 MA4056NH
Q6305 2SD601A (5V REG.)
C6302 0.01
C6303 10V47
D6306 MA4056NH
R6309 820
Q6307 2SC1959Y (5V REG.)
C6310 0.01
C6309 10V47
D6307 MA4056NH
R6310 1800
Q6306 2SD601A (5V REG.)
C6301 0.01
R6307 2200
D6305 MA4062NL
D7751 RB441P
D7753 1SS254
D7754 RB441P
C7752 6V330
D6302 RB441P
TW1004
D7752 MA700A
R7751 1K
B7751 CR2354-1GUF

P31001 (TO POWER P1102 (D-11))
1 UNREG 13V
2 UNREG16V
3 UNREG 6V
4 UNREG 6V
5 UNREG 36V
6
7 GND
8 UNREG -30V
9 GND
10 HEATER (-)
11 HEATER (+)
12 REG 3.3V
13 TRAY SW
14 M+9V/+12V
15 GND(M)
16 GND(D)
17 D +1.5V
18 NP OFF Ⓛ
19 M 9V/12V CTL

Ⓣ HEATER (+)
Ⓣ HEATER (-)
Ⓢ POWER ON Ⓗ
Ⓢ UNREG 16V
Ⓢ SW 36V
Ⓘ M 9V/12V CTL
Ⓣ NP OFF Ⓛ
Ⓣ TRAY SW
Ⓘ D +1.5V
Ⓘ M +9V/+12V
Ⓣ REG 3.3V
Ⓣ Ⓘ UNREG -30V
Ⓢ UNREG 13V
Ⓢ Ⓥ Ⓘ UNREG 6V
Ⓢ REG 5V
Ⓥ Ⓐ AV 12V
Ⓢ Ⓣ GND
Ⓥ Ⓐ GND
Ⓘ Ⓓ GND

Ⓥ TUNER VIDEO A1
Ⓢ AFC S-CURVE A2
Ⓓ SIF A3
Ⓥ Ⓐ TUNER AUDIO (N) A4
Ⓢ SW1 A5
Ⓢ SW2 A6
Ⓢ IIC DATA A7
Ⓢ IIC CLOCK A8
Ⓐ RFC AUDIO OUT A9
Ⓥ RFC VIDEO OUT A10

Ⓢ Ⓥ AD 5V
Ⓢ BACK UP 5V
Ⓐ N.SW 5V
Ⓘ D +5V
Ⓘ A +5V
Ⓢ Ⓥ VIDEO 5V
Ⓥ Ⓐ Ⓓ AUDIO 5V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
POWER SUPPLY/RF SECTION
SCHEMATIC DIAGRAM

G F E D C B A
1 2 3 4 5 6 7 8 9 10

Ⓟ :TO POWER SUPPLY/RF SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION
Ⓓ :TO DECODER SECTION

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP

IC1511
RPI303
(T-REEL SENSOR)

IC1512
RPI303
(S-REEL SENSOR)

IC6201
PST3142NR
(RESET)

MODE SW
S1532
K0ZZ00000598

IC6001
C2CBHF000327:GL
C2CBHF000324:GC/GCS

Q1501
PNA2604M01
(T-PHOTO)

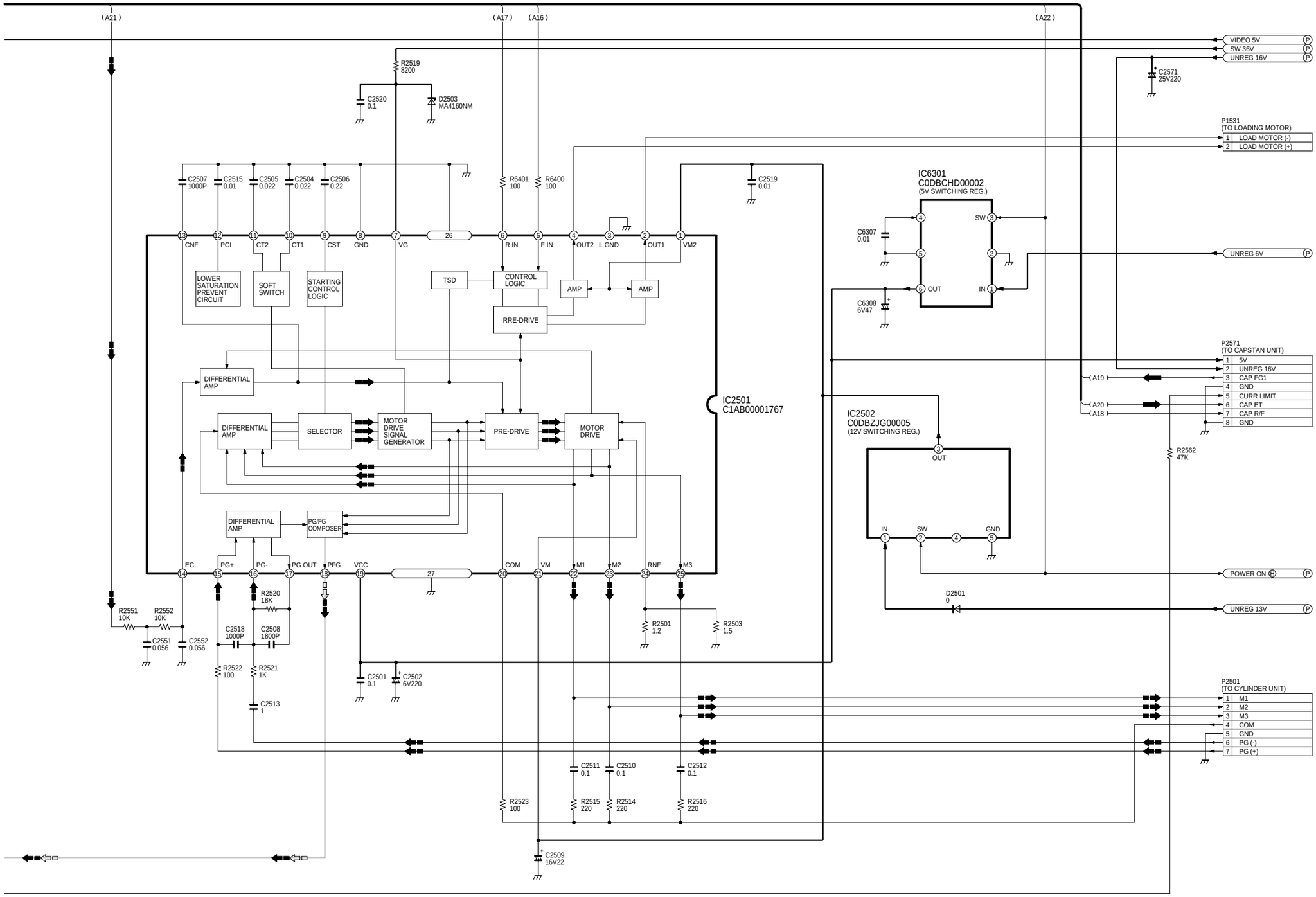
Q1502
PNA2604M01
(S-PHOTO)

SENSOR
D1501
B3EA00000072

Q7701
2SB709A
(AMP)

SAFETY TAB
S1531
K0C111A00006

NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM



NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓘ :TO DVD INTERFACE SECTION

DP37501
A2BB00000120

R36125 22
R36126 22
C36055 0.01
C36006 35V10
D36002 MA420N-M1
R36010 390
R36006 47K
R36007 47K
R36008 47K

IC36001
MN101C35DPH

IC36002
PST3427UR
(RESET)

X36001
H2D800400009

QR36002
UN5212
(INV.)

QR36001
UN5212
(INV.)

QR36008
UN5211
(SWITCHING)

QR36007
UN5211
(SWITCHING)

PS7502
TO FRONT SW PP7381(A-1)

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
TIMER SECTION SCHEMATIC DIAGRAM

MAIN SIGNAL PATH

FP2501
(TO FG UNIT)

FG3	1	FG3
FG2	2	
FG2	3	
FG1	4	FG1

IC2501
C0GBG0000033
(FOCUS/TRACKING COIL, SPINDLE/ TRAVERSE MOTOR DRIVE)

VO1+ VO1- VO2+ VO2- GND MUTE12 Vcc GND OPOUT OPIN- OPIN+ VIN2 VIN1 BIAS1
VO4+ VO4- VO3+ VO3- GND MUTE4 Vcc PREVcc VIN3 LDIN BIAS2 TRIN MUTE3 LDCNT

M2502
(TRAVERSE MOTOR)

M2501
(SPINDLE MOTOR)

FP5101
(TO OPTICAL PICKUP)

T+	30	T+
F+	29	F+
F-	28	F-
T-	27	T-
3.3VHFM	26	
GND	25	
LD+(DVD)	24	
GND	23	
GND	22	
RFP	21	RFP
RFN	20	RFN
F1(DVD)	19	F1(DVD)
F2(DVD)	18	F2(DVD)
GAIN H/L	17	GAIN H/L
PIN(DVD)	16	PIN(DVD)
VREF2.2(DVD)	15	VREF2.2(DVD)
TA(DVD)	14	TA(DVD)
TD(DVD)	13	TD(DVD)
TC(DVD)	12	TC(DVD)
TB(DVD)	11	TB(DVD)
Vcc5V	10	Vcc5V
FE1(CD)	9	FE1(CD)
GND	8	GND
LD+(CD)	7	LD+(CD)
T1(CD)	6	T1(CD)
VREF2.2(CD)	5	VREF2.2(CD)
FE2(CD)	4	FE2(CD)
T2(CD)	3	T2(CD)
PIN(CD)	2	PIN(CD)
GND	1	GND

Q5111
2SB1115
(LASER POWER DRIVE [DVD])

Q5115
2SB1115
(LASER POWER DRIVE [CD])

TO DVD MODULE (FORE) FP5201 (G-2)

1	FG1	FP5201-50
2	FG3	FP5201-49
3	D.GND	FP5201-48
4	D.GND	FP5201-47
5	MUTE4	FP5201-46
6	D+5V	FP5201-45
7	D+5V	FP5201-44
8	TRAYIN	FP5201-43
9	M+9V	FP5201-42
10	M+9V	FP5201-41
11	M+9V	FP5201-40
12	M.GND	FP5201-39
13	M.GND	FP5201-38
14	M.GND	FP5201-37
15	TRAYREF	FP5201-36
16	MUTE12	FP5201-35
17	MUTE3	FP5201-34
18	DMV	FP5201-33
19	FOIN	FP5201-32
20	TRIN	FP5201-31
21	SPIN	FP5201-30
22	TRVIN	FP5201-29
23	IN-SW	FP5201-28
24	LDCUR	FP5201-27
25	VHALF	FP5201-26
26	A.GND	FP5201-25
27	PIN (CD)	FP5201-24
28	T2 (CD)	FP5201-23
29	FE2 (CD)	FP5201-22
30	T1 (CD)	FP5201-21
31	LPCO2	FP5201-20
32	A.GND	FP5201-19
33	FE1 (CD)	FP5201-18
34	Vcc 5V	FP5201-17
35	TB (DVD)	FP5201-16
36	TC (DVD)	FP5201-15
37	TD (DVD)	FP5201-14
38	TA (DVD)	FP5201-13
39	TRAY/TRV	FP5201-12
40	VREF2.2V	FP5201-11
41	PIN (DVD)	FP5201-10
42	GAIN H/L	FP5201-9
43	F2 (DVD)	FP5201-8
44	F1 (DVD)	FP5201-7
45	RFN	FP5201-6
46	RFP	FP5201-5
47	A.GND	FP5201-4
48	LPCO1	FP5201-3
49	A.GND	FP5201-2
50	3.3VHFM	FP5201-1

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS DVD PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
TRAVERSE SCHEMATIC DIAGRAM

Ⓟ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION
Ⓘ :TO DVD INTERFACE SECTION
Ⓓ :TO DECODER SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

AV1 IN VHS/DVD OUT
JK33001 K2HA609B0003
AUDIO IN(R) AUDIO OUT(R) AUDIO IN(L) AUDIO OUT(L) VIDEO IN VIDEO OUT

P AV 12V
L3701 68u
S IIC CLOCK
S IIC DATA
S FM MUTE (H)
S HEAD SW
S MESECAM (H)
S TRACKING ENV.
I DVD VIDEO OUT
S DVD OUT (H)
S VIDEO OUT
P RFC VIDEO OUT
A AUDIO IN (R)
A AUDIO OUT (R)
A AUDIO IN (L)
A AUDIO OUT (L)

TL4406 TL4404 TL4405 TL4403 TL3712 TL3711
LB4406 0 LB4404 0 LB4405 0 LB4403 0
R4406 0 R4404 470 R4405 0 R4403 470
R3711 68
R3718 680 C3716 0.1
C3715 6V470
Q3702 2SB1218A (AMP)
R3717 470
R3702 3300 C3712 0.1

IC3703 C1AB00001192
C3713 0.1 R36033 220 C3714 0.01
R3712 75

P4002 (TO A/C HEAD)
AUDIO ERASE IN 1
GND 2
AUDIO HEAD (R) 3
AUDIO HEAD (W) 4
CTL HEAD(-) 5
CTL HEAD(+) 6
S CTL HEAD (+)
S CTL HEAD (-)

R4081 10K C4082 470P
C4081 0.022
T4081 EQQ7QF024Q
R4082 3300
Q4081 2SD602A (OSC)
C4084 1800P
C4085 0.022

P4001 (TO FULL ERASE HEAD)
FULL ERASE IN 1
FULL ERASE OUT 2
P UNREG 6V
P GND

R4086 2200
R4087 2200
Q4084 2SB710A (ERASE HEAD DRIVE)
L4081 470u
C4083 6V47
QR4082 UN2213 (BIAS (H):ON)

P5001 (TO CYLINDER UNIT)
LP/EP R 1
LP/EP COM 2
LP/EP L 3
SP R 4
SP COM 5
SP L 6
GND 7
AUDIO HEAD L 8
AUDIO HEAD COM 9
AUDIO HEAD R 10
A AUDIO HEAD R
A AUDIO HEAD COM
A AUDIO HEAD L

C4066 2200P
QR4061 UN2211 (PAL 9H(H):ON)
QR3004 UN2213 (LP/EP:ON)

S SP (L)
S BIAS (H)
S PAL 9H (H)
S D.REC (H)
P D TUNER AUDIO (N)
A AUDIO IN (N)
A AUDIO OUT (N)

QR4081 UN2111 (D.A.REC(H):OFF)
R4084 1K
R4085 1K
Q4082 2SD1149 (PB:ON)
Q4083 2SD601A (PB:ON)

P AUDIO 5V
P VIDEO 5V

L5001 68u
C5006 0.1
C5005 6V100
C4052 0.1
R4061 330K
C4061 0.01
R4062 10K
R4063 200
C4062 6V33
C4063 50V3.3
R4071 15K
C4065 1800P
R4015 20K
C4042 50V4.7
C3066 0.1

C3047 0.1
(GL) R3038 2200
C3046 1
(GC/GCS)

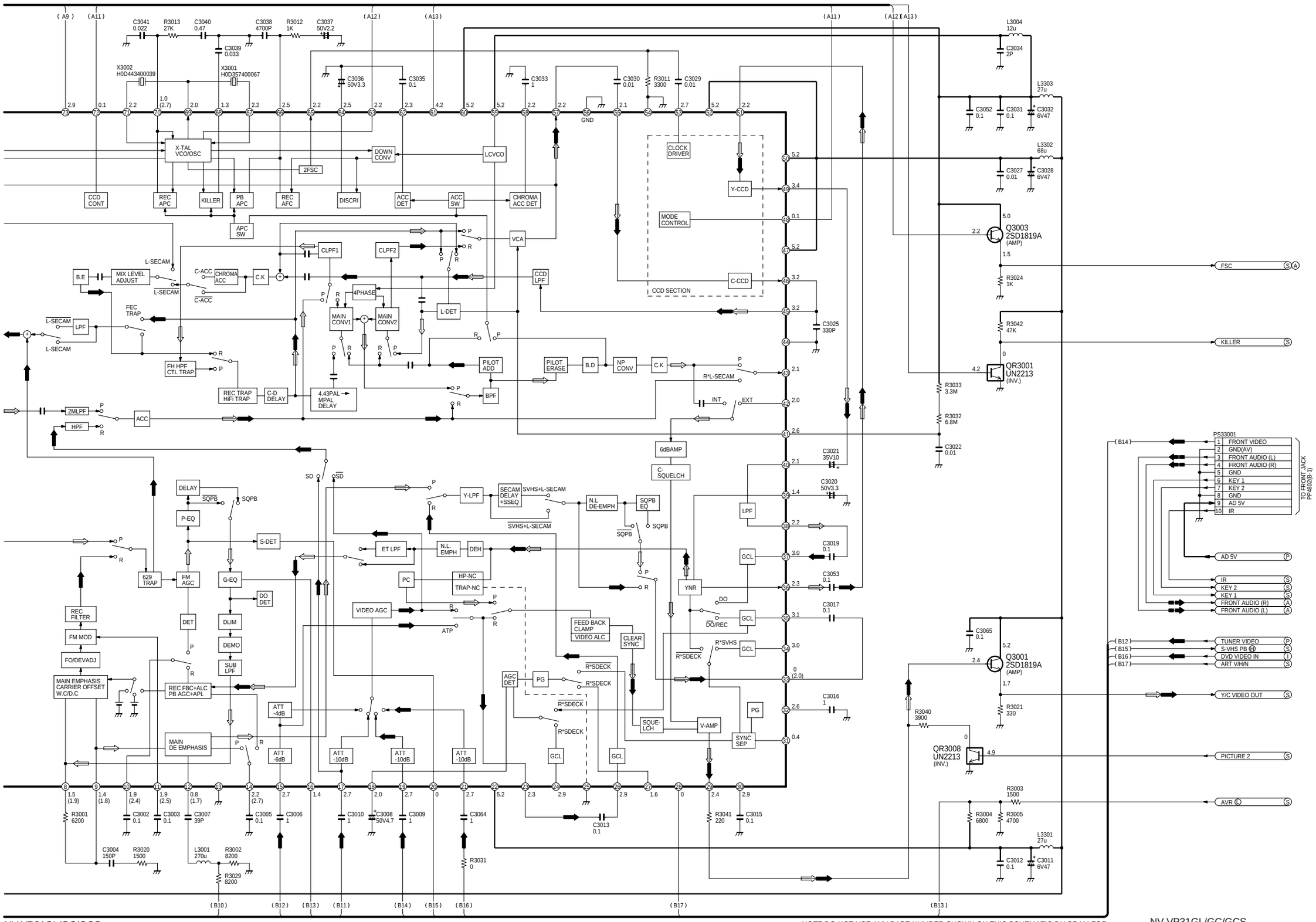
C5001 0.01
C5002 0.01
C5003 0.01
C5004 0.01
SP2 SP1 VCA

R3018 15K R4002 10K
TW3001 C3042 50V4.7
B-Y INVERT
COME
TANK
CR DET
MESECAM DET
COLOR LEVEL DETECTOR
DET DET
ENVDET HPF
REC MUTE
CH2 CH1
EXT INT
SP
FH TRAP
SP ON
PREAMP
REC ON
EP ON
REC EQ
C4041 50V4.7
LB4077 0
LB4078 0
C4064 1800P
C4018 6V22
BAND GAP

IC3001 HA118425AF

R4017 56K R4016 47K R4011 4700 R4012 15K
C4010 35V10 C3062 35V10

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

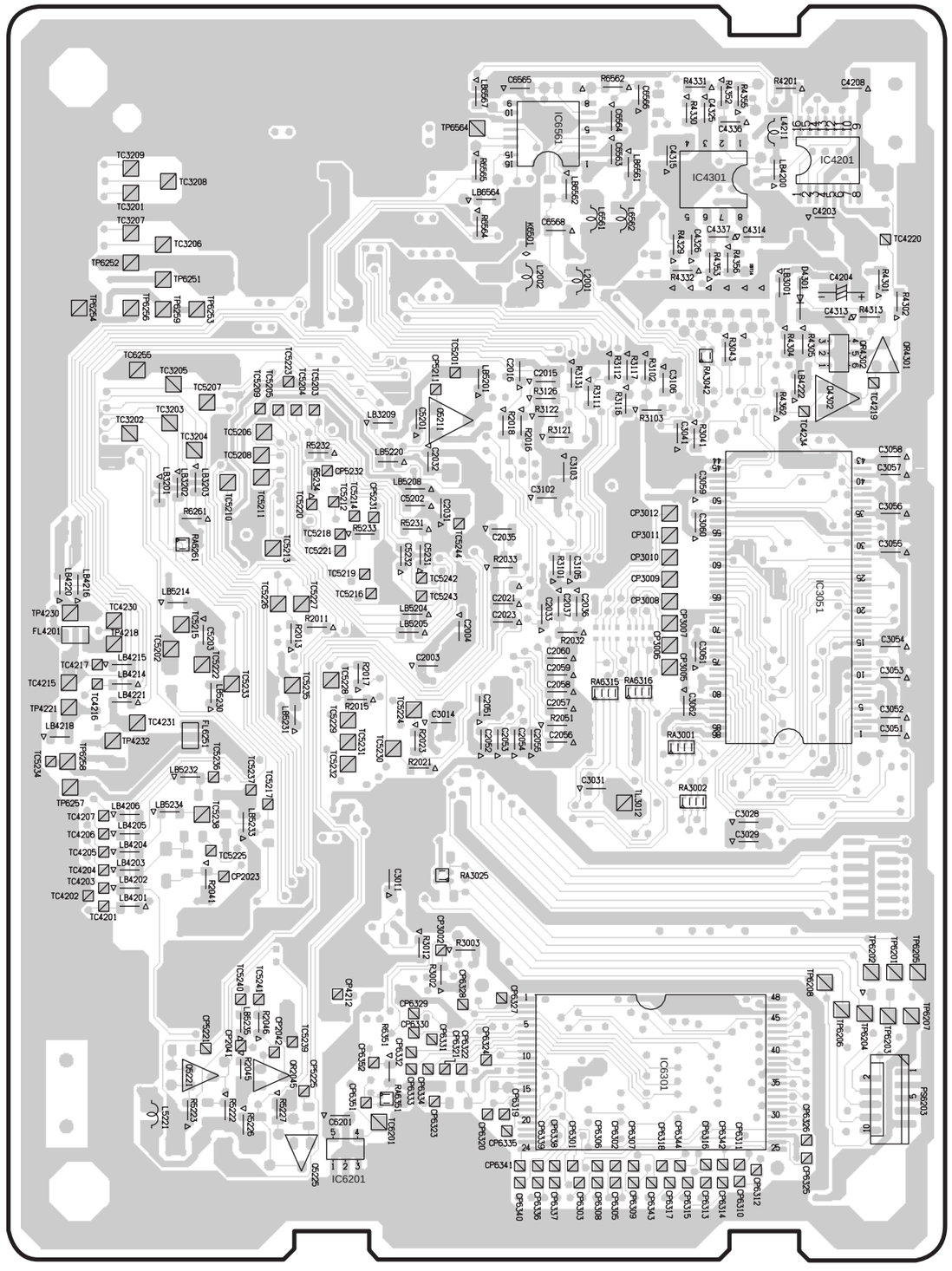


NV-VP31GL/GC/GCS
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

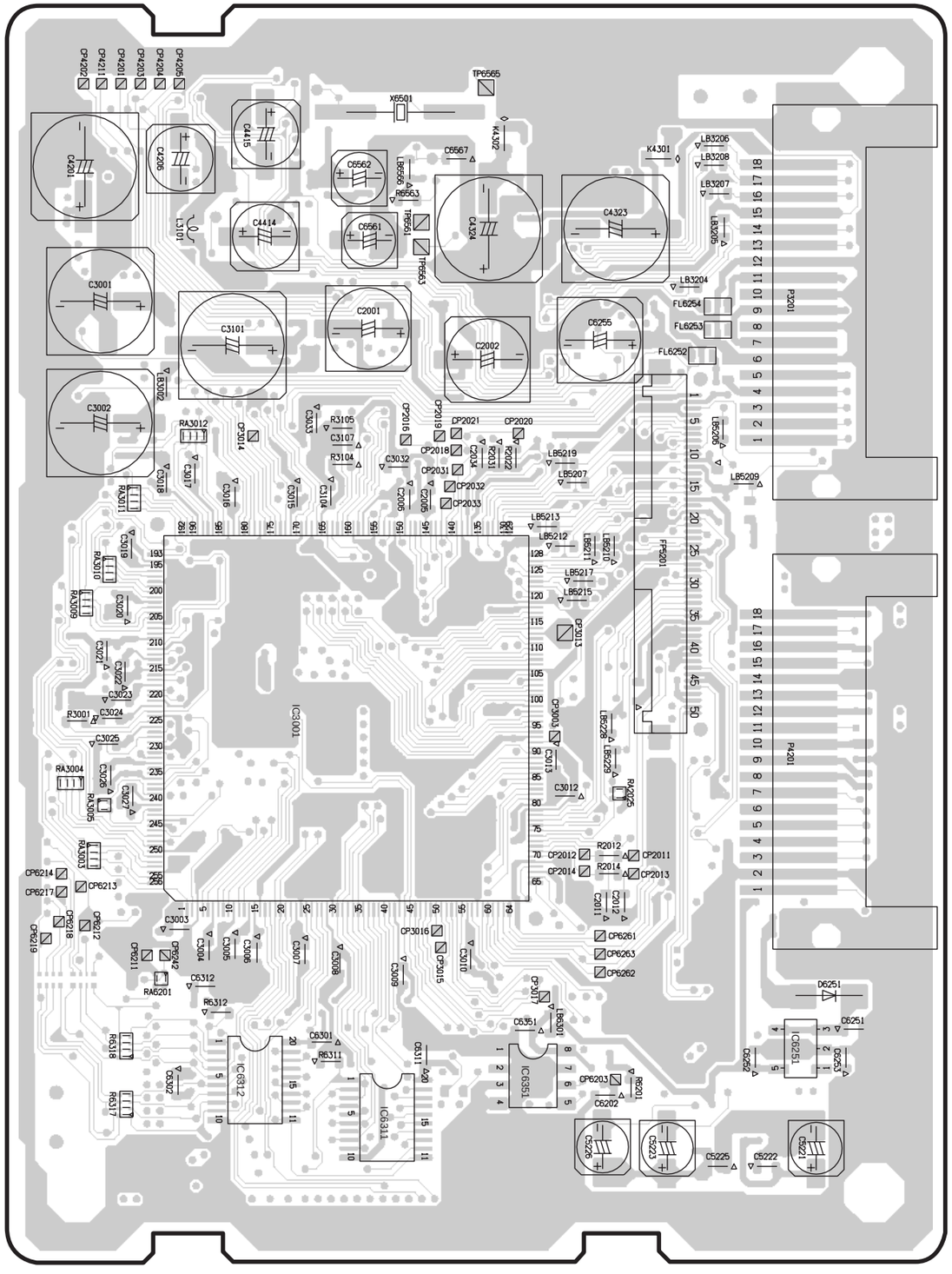
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

(REP3597B)



(FOIL SIDE)



(COMPONENT SIDE)

NV-VP31GL/GC/GCS
DVD MODULE C.B.A.

MODULE C.B.A. ADDRESS INFORMATION

FOIL SIDE

Integrated Circuit	
IC3051	E-6
IC4201	G-6
IC4301	G-5
IC6201	A-3
IC6301	B-5
IC6561	G-5

Transistor	
Q4302	F-6
Q5211	F-4
Q5221	B-2
Q5225	A-3
QR2045	B-3
QR4301	F-7
QR4302	F-6

Diode	
D4301	F-6

Coil	
L2001	F-5
L2002	F-4
L4211	G-6
L5221	B-2
L6561	G-5
L6562	G-5

Bead Core	
LB3001	F-6
LB3201	E-2
LB3202	E-2
LB3203	E-3
LB3209	F-4
LB4200	G-6
LB4201	C-2
LB4202	C-2
LB4203	C-2
LB4204	C-2
LB4205	C-2
LB4206	C-2
LB4214	D-2
LB4215	D-2
LB4216	E-2
LB4218	D-2
LB4220	E-2
LB4221	D-2
LB4222	F-6
LB5201	F-4
LB5204	E-4
LB5205	D-4
LB5208	E-4
LB5214	E-2
LB5220	E-4
LB5222	C-2
LB5230	D-3
LB5231	D-3
LB5232	D-2
LB5233	C-3
LB5234	C-2
LB5235	B-3
LB6561	G-5
LB6562	G-5
LB6564	G-4
LB6567	G-4

Filter	
FL4201	D-2
FL6251	D-3

Connector	
PS6202	C-6

Resistor Array	
RA3001	D-5
RA3002	D-5
RA3025	C-4
RA3042	F-5
RA6261	E-3
RA6315	D-5
RA6316	D-5
RA6351	B-4

Test Point	
CP2023	C-3
CP2042	B-3
CP2047	B-3
CP3002	C-4
CP3005	D-5
CP3006	D-5
CP3007	D-5
CP3008	E-5
CP3009	E-5
CP3010	E-5
CP3011	E-5
CP3012	E-5
CP4212	B-3
CP5211	F-4
CP5221	B-3
CP5225	B-3
CP5231	E-4
CP5232	E-3
CP6301	A-5
CP6302	A-5
CP6303	A-5
CP6305	A-5
CP6306	A-5
CP6307	A-5
CP6308	A-5
CP6309	A-5
CP6310	A-6
CP6311	A-6
CP6312	A-6
CP6313	A-5
CP6314	A-6
CP6315	A-5
CP6316	A-5
CP6317	A-5
CP6318	A-5
CP6319	B-4
CP6320	B-4
CP6321	B-4
CP6322	B-4
CP6323	B-4
CP6324	B-4
CP6325	A-6
CP6326	B-6
CP6327	B-4
CP6328	B-4
CP6329	B-4
CP6330	B-4
CP6331	B-4
CP6332	B-4
CP6333	B-4
CP6334	B-4
CP6335	B-4
CP6336	A-4
CP6337	A-5
CP6338	A-4
CP6338	A-5
CP6340	A-4
CP6341	A-4
CP6342	A-6
CP6343	A-5
CP6344	A-5
CP6351	B-3
CP6352	B-4
TC3201	G-2
TC3202	F-2
TC3203	F-2
TC3204	E-3
TC3205	F-2
TC3206	G-2
TC3207	G-2
TC3208	G-2
TC3209	G-2
TC4201	C-2
TC4202	C-2
TC4203	C-2
TC4204	C-2
TC4205	C-2
TC4206	C-2
TC4207	C-2
TC4215	D-2
TC4216	D-2
TC4217	D-2
TC4219	F-6
TC4230	D-2
TC4231	D-2
TC4234	F-6
TC5201	F-4
TC5202	D-2
TC5203	F-3
TC5204	F-3
TC5205	F-3
TC5206	F-3
TC5207	F-3
TC5208	E-3
TC5209	F-3
TC5210	E-3
TC5211	E-3
TC5212	E-3
TC5213	E-3
TC5214	E-3
TC5215	D-2
TC5216	E-4
TC5217	C-3
TC5218	E-3
TC5219	E-3
TC5220	E-3
TC5221	E-3
TC5222	D-3
TC5223	F-3
TC5224	D-4
TC5225	C-3
TC5226	E-3
TC5227	E-3
TC5228	D-3
TC5229	D-3
TC5230	D-4
TC5231	D-3
TC5232	D-3
TC5233	D-3
TC5234	D-2
TC5235	D-3
TC5236	D-3
TC5237	D-3
TC5238	C-3
TC5239	B-3
TC5240	B-3
TC5241	B-3
TC5242	E-4
TC5243	E-4
TC5244	E-4
TC6201	B-4
TL3012	C-5
TP4218	D-2
TP4221	D-2
TP4230	E-2
TP4232	D-2
TP6028	B-6
TP6201	B-6
TP6202	B-6
TP6203	B-6
TP6204	B-6
TP6205	B-7
TP6206	B-6
TP6207	B-7
TP6251	F-2
TP6252	F-2
TP6254	F-2
TP6255	F-2
TP6256	F-2
TP6257	D-2
TP6258	D-2
TP6259	F-2
TP6564	G-4

COMPONENT SIDE

Integrated Circuit	
IC3001	D-9
IC6251	B-12
IC6311	B-10
IC6312	B-9
IC6351	B-11

Diode	
D6251	B-12

Coil	
L3101	G-9

Bead Core	
LB3002	F-8
LB3204	F-11
LB3205	G-12
LB3206	G-12
LB3207	G-12
LB3208	G-12
LB5206	F-12
LB5207	E-11
LB5209	E-12
LB5210	E-11
LB5211	E-11
LB5212	E-11
LB5213	E-11
LB5215	E-11
LB5217	E-11
LB5219	E-11
LB5228	D-11
LB5229	D-11
LB6301	B-11
LB6566	G-10

Filter	
FL6252	F-11
FL6253	F-11
FL6254	F-11

Crystal Oscillator	
X6501	G-10

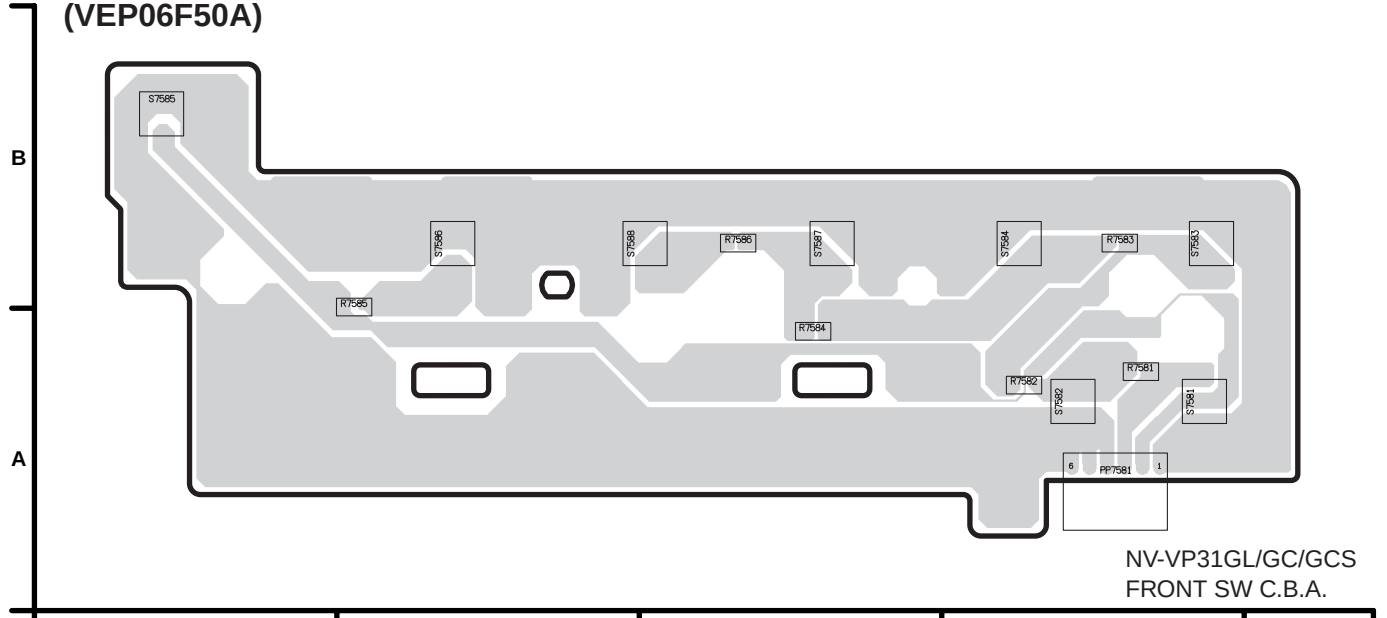
Resistor Array	
RA2025	D-11
RA3003	C-8
RA3004	D-8
RA3005	C-8
RA3009	E-8
RA3010	E-8
RA3011	E-8
RA3012	F-9
RA3042	F-5
RA6201	B-8
R6317	B-8
R6318	B-8

Connector	
FP5201	E-11
P3201	F-12
P4201	D-12

Test Point	
CP4202	G-8
CP4211	G-8
CP4201	G-8
CP4203	G-8
CP4204	G-8
CP6214	C-8
CP6217	C-8
CP6213	C-8
CP6212	C-8
CP6218	C-8
CP6219	C-8
CP6211	C-8
CP4205	G-9
CP3014	E-9
CP6242	C-9
TP6565	G-10
TP6561	G-10
TP6563	G-10
CP2021	F-10
CP2016	E-10
CP2019	E-10
CP2018	E-10
CP2031	E-10
CP2032	E-10
CP2033	E-10
CP2020	F-10
CP3016	C-10
CP3015	C-10
CP3013	D-11
CP3003	D-11
CP2012	C-11
CP2011	C-11
CP2014	C-11
CP2013	C-11
CP6261	C-11
CP6263	C-11
CP6262	B-11
CP6203	B-11
CP3017	B-11

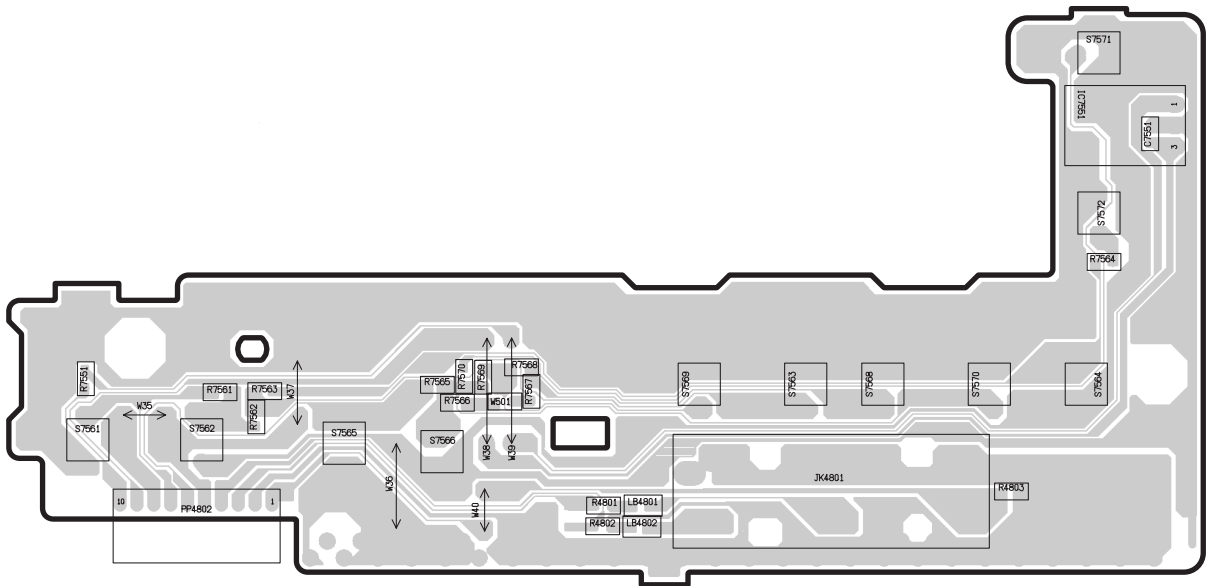
NV-VP31GL/GC/GCS
DVD MODULE C.B.A.

(VEP06F50A)



NV-VP31GL/GC/GCS
FRONT SW C.B.A.

(VEP04849A)

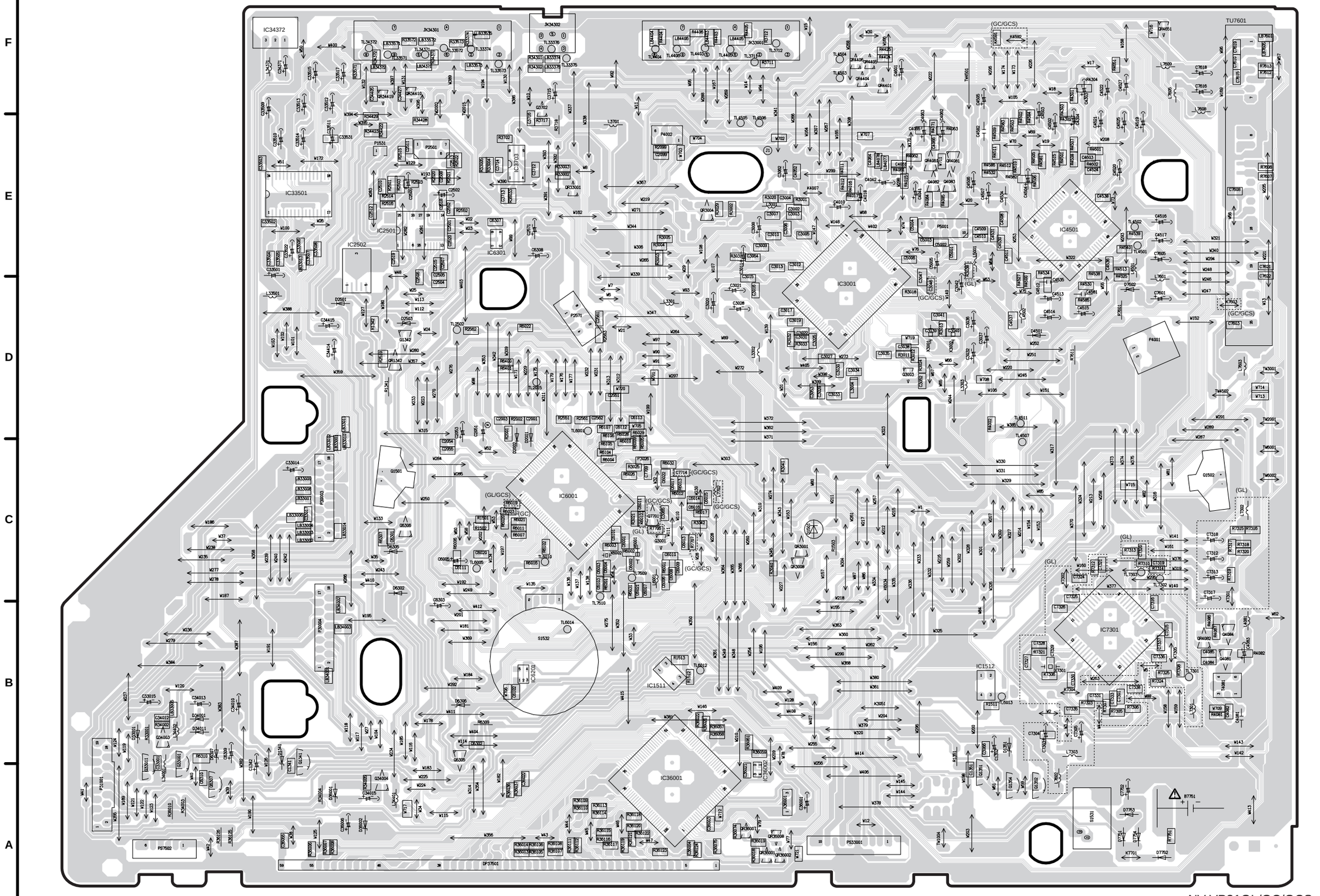


NV-VP31GL/GC/GCS
FRONT JACK C.B.A.

C
B
A

1 2 3 4 5

(VEP06F49A:NV-VP31GL)(VEP06F49C:NV-VP31GC)(VEP06F49D:NV-VP31GCS)



NV-VP31GL/GC/GCS
MAIN C.B.A.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

MAIN C.B.A.

Transistor		**Test Point**	
Q1341	B-2	TL2015	D-4
Q1342	D-3	TL2502	D-3
Q1351	A-6	TL3711	F-5
Q1352	A-7	TL3712	F-5
Q1354	A-7	TL4403	F-5
Q1501	C-3	TL4404	F-4
Q1502	C-8	TL4405	F-5
Q3001	C-4	TL4406	F-5
Q3003	D-6	TL4501	E-7
Q3702	F-4	TL4502	E-7
Q4081	B-8	TL4503	F-6
Q4082	E-6	TL4504	F-6
Q4083	E-6	TL4505	E-5
Q4084	B-8	TL4506	E-5
Q6305	B-3	TL4507	C-7
Q6306	C-3	TL4511	D-7
Q6307	A-2	TL6001	D-4
Q7701	C-4	TL6005	C-3
Q33001	B-1	TL6010	C-4
Q33011	A-1	TL6012	B-5
Q34003	B-1	TL6013	B-7
Q34004	A-3	TL6014	B-4
Transistor & Resistor		TL7301	B-8
QR1342	D-3	TL7302	C-8
QR3001	C-5	TL7303	C-7
QR3004	E-5	TL7509	C-4
QR3008	C-5	TL7510	C-4
QR4061	E-6	TL33374	F-3
QR4081	E-6	TL33375	F-5
QR4082	B-8	TL33376	F-5
QR4401	F-6	TL33571	F-3
QR4404	F-6	TL33572	F-3
QR4405	F-6	TL33573	F-3
QR4406	F-6	TL34371	F-3
QR4651	F-8	TL34372	F-3
QR33001	E-4	TW1004	A-6
QR34410	F-3	TW2001	D-8
QR34419	F-3	TW2002	F-3
QR36001	A-5	TW2015	F-3
QR36002	A-5	TW3001	D-8
QR36007	A-5	TW4501	F-6
QR36008	A-5	TW4502	D-8
Integrated Circuit		TW6001	C-8
IC1511	B-4	TW6002	C-8
IC1512	B-6	**Connector**	
IC2501	E-3	P1531	E-3
IC2502	F-3	P2501	E-3
IC3001	D-6	P2571	D-4
IC3703	E-4	P4001	D-7
IC4501	E-7	P4002	E-4
IC6001	C-4	P5001	E-6
IC6201	B-4	P30003	C-2
IC6301	E-3	P30004	B-2
IC7301	B-7	P31001	A-1
IC33501	E-2	PS7502	A-1
IC34372	F-2	PS33001	A-6
IC36001	A-5	TU7601	F-8
IC36002	A-5		

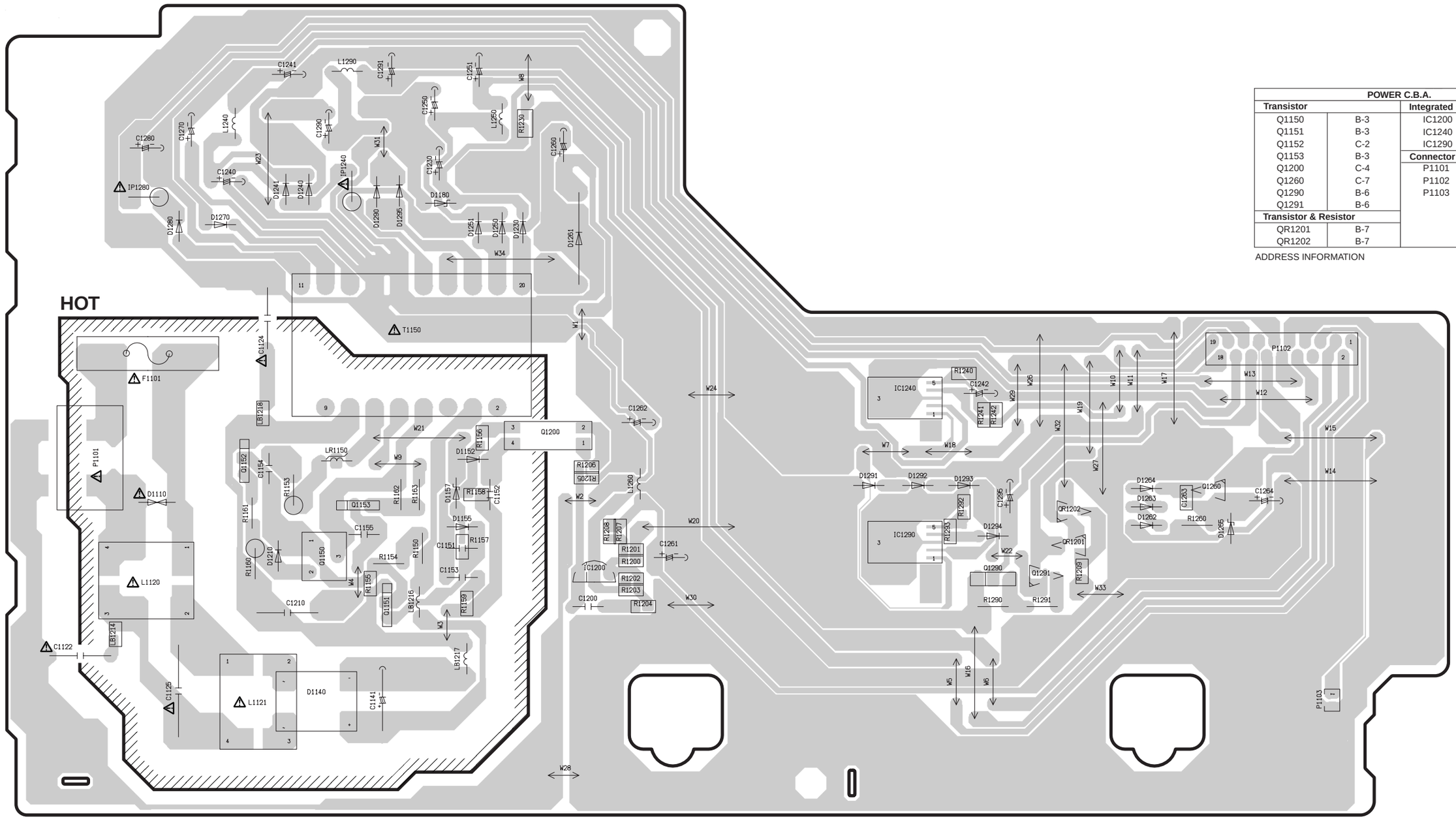
ADDRESS INFORMATION

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

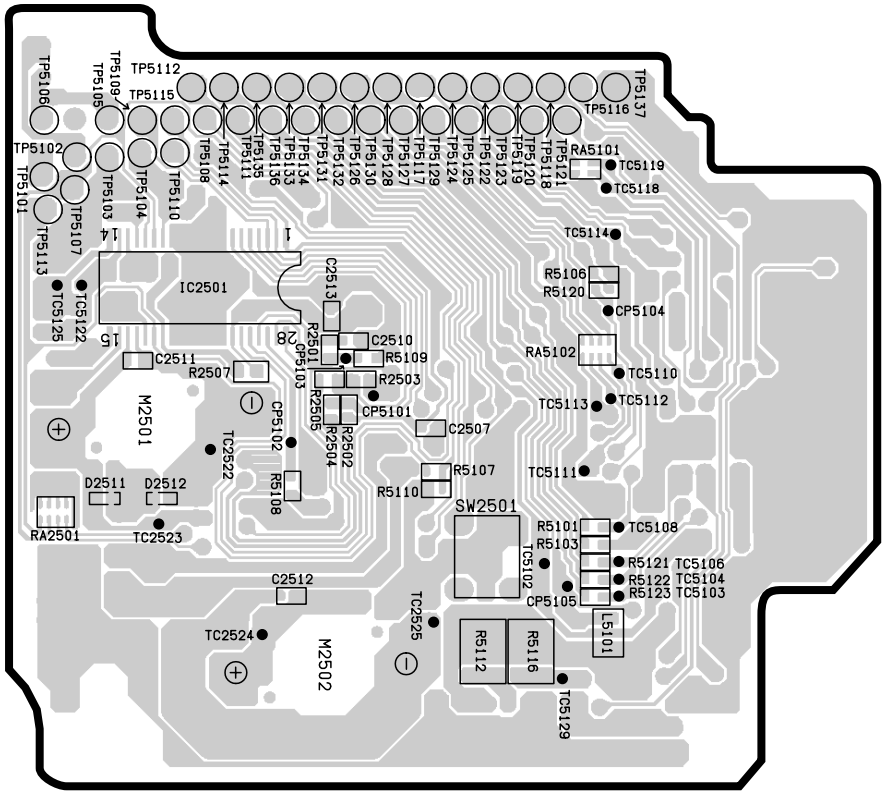
(VEP01940A)



POWER C.B.A.			
Transistor		**Integrated Circuit**	
Q1150	B-3	IC1200	B-4
Q1151	B-3	IC1240	C-6
Q1152	C-2	IC1290	B-6
Q1153	B-3	**Connector**	
Q1200	C-4	P1101	C-1
Q1260	C-7	P1102	C-8
Q1290	B-6	P1103	A-8
Q1291	B-6		
Transistor & Resistor			
QR1201	B-7		
QR1202	B-7		

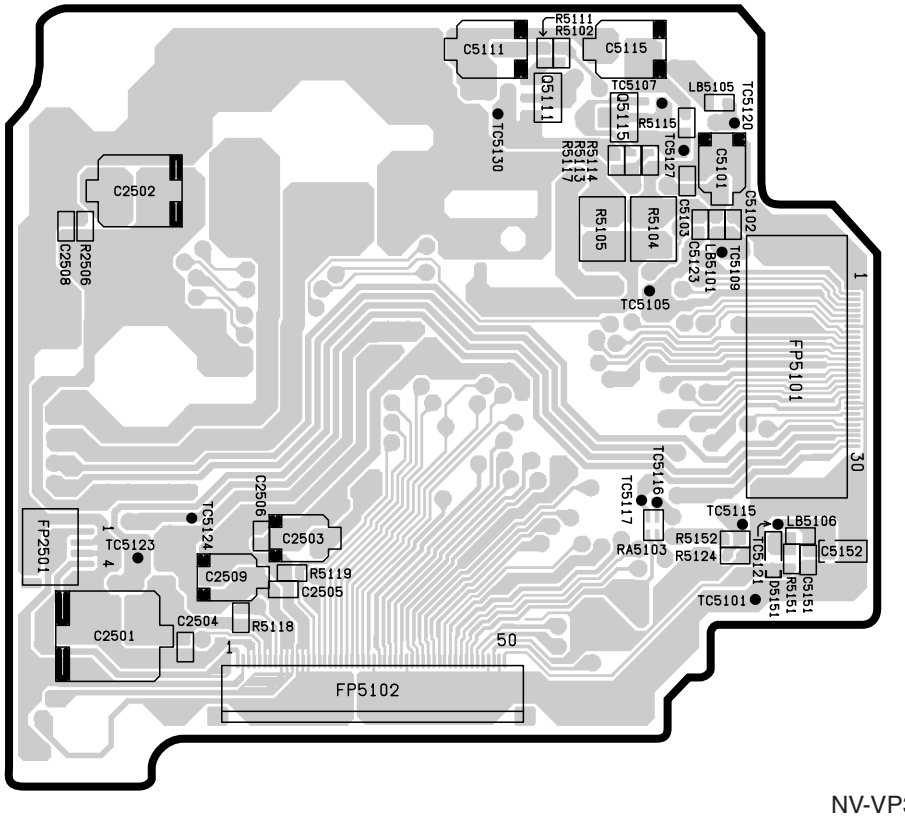
ADDRESS INFORMATION

(REP3406A-1N)



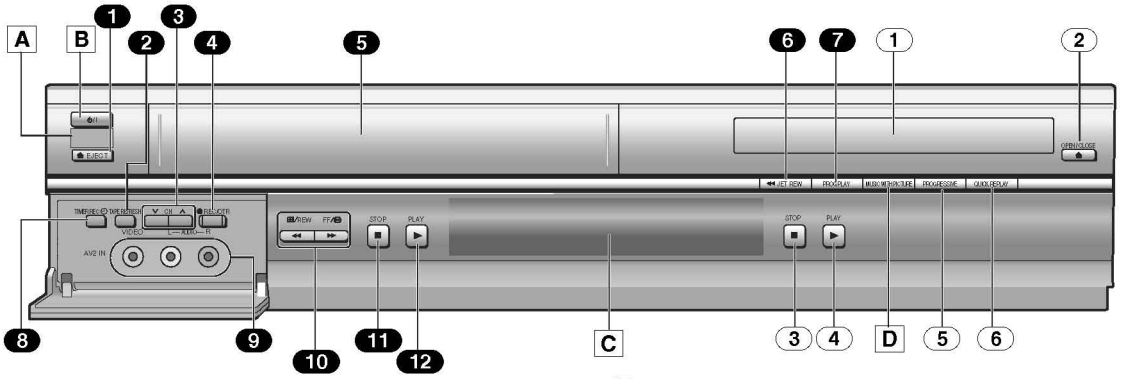
(FOIL SIDE)

(COMPONENT SIDE)



NV-VP31GL/GC/GCS
TRAVERSE C.B.A.

Main Unit



Common section

A **Infra-red remote control receiver window**

B **Power button (⏻/I)**
Press **[⏻/I]** to switch this unit from on to standby mode or vice versa. In standby mode, the unit is still connected to the main AC power.

C **Display**

D **MUSIC WITH PICTURE button** ..... **(➜page 43)**

VHS section

1 **Tape eject button (▲EJECT)**..... **(➜page 14)**

2 **TAPE REFRESH button**..... **(➜page 17)**

3 **Channel up/down buttons (CH∨∧)**..... **(➜page 15,16)**

4 **Recording/One-Touch Recording button (●REC/OTR)** ..... **(➜page 16,17)**

5 **Cassette compartment**

6 **Jet Rewind button (◀◀JET REW)** ..... **(➜page 14)**

7 **Easy Programme Playback button (PROG PLAY)**....**(➜page 21)**

8 **Timer recording button (TIMER REC◴)**..... **(➜page 18)**

9 **AV2 IN (AUDIO/VIDEO) sockets** ..... **(➜page 17)**

10 **Fast-forward/rewind buttons (◀◀/REW FF/▶▶, ◀◀ ▶▶)**..... **(➜page 14)**

11 **STOP■ button** ..... **(➜page 14)**

12 **PLAY▶ button** ..... **(➜page 14)**

DVD section

1 **Disc tray**

2 **Disc tray open/close button (OPEN/CLOSE▲)**.....**(➜page 26)**

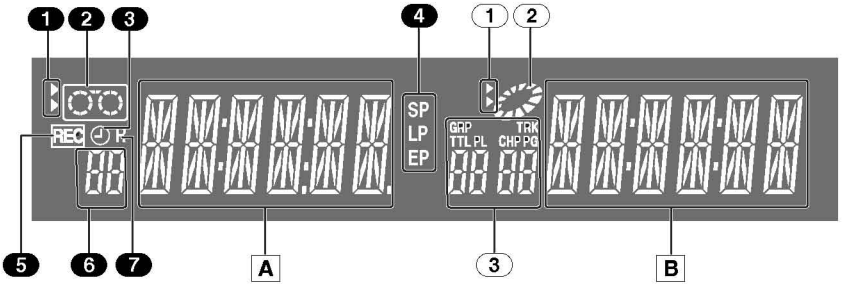
3 **STOP■ button** ..... **(➜page 26)**

4 **PLAY▶ button**..... **(➜page 26)**

5 **PROGRESSIVE button**..... **(➜page 13)**

6 **QUICK REPLAY button**..... **(➜page 28)**

The Unit's Display



Common section

A **Main display**
- Current time/VHS recording and play counter/Timer recording start time/Miscellaneous messages, etc.

B **Main display**
- Disc play counter/Timer recording end time/Disc type (➜page 5)/Miscellaneous messages, etc.

VHS section

1 **VHS selector indicator**
- Lights up when the VHS section is active. It flashes for about 5 seconds immediately after selection is made.

2 **Operation status of VHS section**
- Lights up when a cassette is inserted.
- Flashes when recording or timer recording is attempted with no cassette inserted.
- Displays play status graphically.
  Rotating: playing
  Stopped: paused

3 **Timer programme recording indicator**.....**(➜page 18)**

4 **Tape speed indicator**.....**(➜page 16)**

5 **Recording indicator**.....**(➜page 16)**

6 **Channel display** .....**(➜page 16)**

7 **Repeat playback indicator** .....**(➜page 14)**

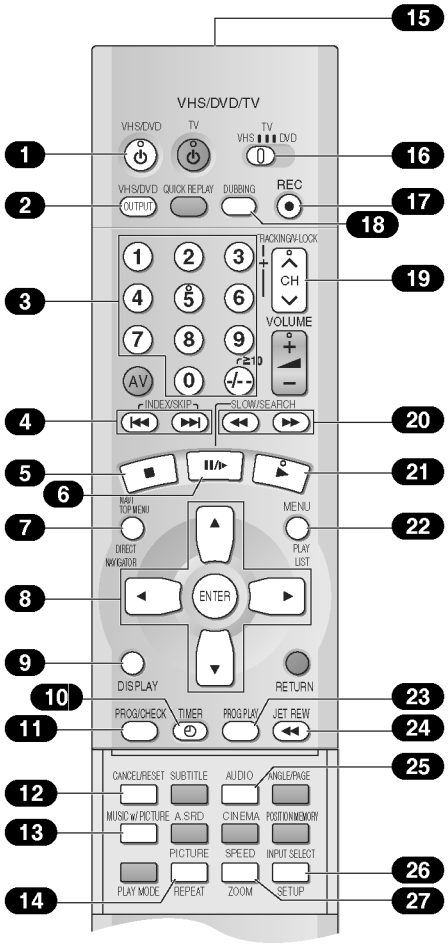
DVD section

1 **DVD selector indicator**
- Lights up when the DVD section is active. It flashes for about 5 seconds immediately after selection is made.

2 **Operation status of DVD section**
- Lights up when a disc is inserted.
- Displays play status graphically.
  Rotating: playing
  Stopped: paused

3 **The display mode of the main display section**

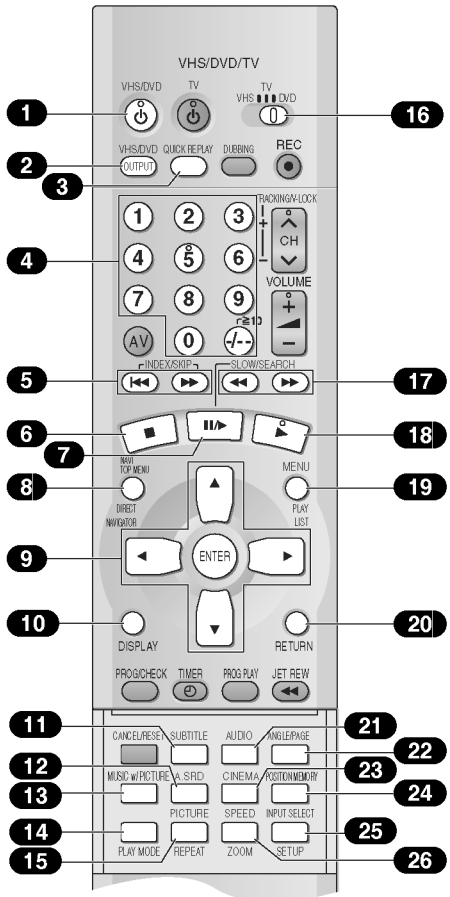
GRP: group number **TRK:** track number
TTL: title number **CHP:** chapter number
PL: play list number **PG:** programme number
C: contents number (HighMAT discs ➜page 33)
G: group number (HighMAT discs ➜page 33)



VHS OPERATION

When you operate the VHS, always select "VHS" with the **[VHS/TV/DVD]** 16 switch.

1. **VHS power button (VHS⏻)** ..... **(➜page 11, 14)**
   Press **[VHS⏻]** to switch this unit from on to standby mode or vice versa.
   In standby mode, the unit is still consuming a small amount of power.
2. **VHS/DVD output switch button (VHS/DVD OUTPUT)** ..... **(➜page 12)**
3. **Numeric buttons (0–9, – /– –)** ..... **(➜page 16)**
4. **Index search buttons (|◀◀ ▶▶|, INDEX)** ..... **(➜page 21)**
5. **Stop button (■)** ..... **(➜page 14)**
6. **Pause/slow button (❚❚/▶)** ..... **(➜page 14)**
7. **Jet Navigator button (NAVI)** ..... **(➜page 20)**
8. **Cursor buttons (▲▼◀ ▶)/ENTER button** ..... **(➜page 12, 22)**
9. **Display button (DISPLAY)** ..... **(➜page 25)**
10. **Timer recording button (TIMER◴)** ..... **(➜page 18)**
11. **Timer programming and check button (PROG/CHECK)** ..... **(➜page 18, 19)**
12. **CANCEL/RESET button** ..... **(➜page 19, 25)**
13. **MUSIC WITH PICTURE button (MUSIC w/ PICTURE)** ..... **(➜page 43)**
14. **Picture mode button (PICTURE)** ..... **(➜page 15)**
15. **Infra-red Transmitter**
16. **VHS/TV/DVD switch (VHS/TV/DVD)**
17. **Recording button (REC●)** ..... **(➜page 16)**
18. **DUBBING button** ..... **(➜page 42)**
19. **Tracking/V-Lock and Channel up/down buttons (TRACKING/V-LOCK, CH∨∧)** ..... **(➜page 15, 16)**
20. **Fast-forward/rewind buttons (◀◀ ▶▶)** ..... **(➜page 14)**
21. **Play button (▶)** ..... **(➜page 14)**
22. **MENU button** ..... **(➜page 12, 22)**
23. **Easy Programme Playback button (PROG PLAY)** ..... **(➜page 21)**
24. **Jet Rewind button (JET REW◀◀)** ..... **(➜page 14)**
25. **AUDIO button** ..... **(➜page 25)**
26. **INPUT SELECT button** ..... **(➜page 17, 42)**
27. **Tape speed button (SPEED)** ..... **(➜page 16)**



DVD OPERATION

When you operate the DVD, always select "DVD" with the **[VHS/TV/DVD]** 16 switch.

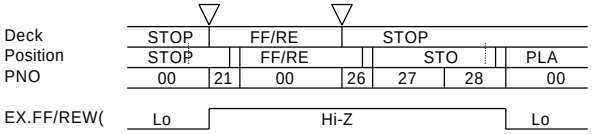
1. **DVD power button (DVD⏻)** ..... **(➜page 26)**
   Press **[DVD⏻]** to switch this unit from on to standby mode or vice versa.
   In standby mode, the unit is still consuming a small amount of power.
2. **VHS/DVD output switch button (VHS/DVD OUTPUT)** ..... **(➜page 12)**
3. **QUICK REPLAY button** ..... **(➜page 28)**
4. **Numeric buttons (0–9, ≧10)** ..... **(➜page 27, 28)**
5. **Skip buttons (|◀◀ ▶▶|, SKIP)** ..... **(➜page 26)**
6. **Stop button (■)** ..... **(➜page 26)**
7. **Still button (❚❚/▶)** ..... **(➜page 26)**
8. **TOP MENU and DIRECT NAVIGATOR button** ..... **(➜page 31, 32)**
9. **Cursor buttons (▲▼◀ ▶)/ENTER button** ..... **(➜page 37, 40)**
10. **On-screen menu icon button (DISPLAY)** ..... **(➜page 37)**
11. **SUBTITLE button** ..... **(➜page 34)**
12. **Advanced Surround button (A.SRD)** ..... **(➜page 35)**
13. **MUSIC WITH PICTURE button (MUSIC w/ PICTURE)** ..... **(➜page 43)**
14. **PLAY MODE button** ..... **(➜page 30)**
15. **REPEAT button** ..... **(➜page 29)**
16. **VHS/TV/DVD switch (VHS/TV/DVD)**
17. **Slow/search buttons (◀◀ ▶▶, SLOW/SEARCH)** ..... **(➜page 26)**
18. **Play button (▶)** ..... **(➜page 26)**
19. **PLAY LIST button** ..... **(➜page 31)**
20. **RETURN button** ..... **(➜page 33, 34, 37, 40)**
21. **AUDIO button** ..... **(➜page 34)**
22. **ANGLE/PAGE button** ..... **(➜page 29, 34)**
23. **CINEMA button** ..... **(➜page 35)**
24. **POSITION MEMORY button** ..... **(➜page 27)**
25. **DVD SETUP menu button (SETUP)** ..... **(➜page 40)**
26. **ZOOM button** ..... **(➜page 35)**

No.	Terminal Name	I/O	Description	P. OFF	P. failure	Reset/ Releas
1	VSS		Unused terminal. Connected to GND. (Input taken as 0V)			
2	CODE1	I	Model setting terminal.	In	In	In
3	KEY1	I	AD Input terminal 1.	In	In	In
4	KEY2	I	AD Input terminal 2.	In	In	In
5	KEY3	I	AD Input terminal 3.	In	In	In
6	KEY4	I	AD Input terminal 4.	In	In	In
7	S-PHOT	I	Tape end detection Input terminal Input voltage:(1) >2.6V, Black tape (2) >2.4V, White tape	In	In	In
8	T-PHOT	I	Tape beginning detection Output terminal Input voltage: (1) >2.6V, Black tape (2) <2.4V, white tape	In	In	In
9	TRACKING_ENVE	I	Normal head Video Envelope Detecting Input Terminal Cylinder FG = 1 or 4 Base From Input time until PGMM time taken as reference time. Timing calculation is performed as follow. Normal head: Ref time + 90 degree time *90 degree time is defined as :NTSC : 8400us,PAL: 10000 us	In	In	In
10	MO/ST/BI	I	Audio signal condition detected by current tuner Input terminal Input Voltage / Sound mode >2.3V: Bilingual >0.85V, <2.3V: Stereo	In	In	In
11	CURRENT.LIMIT	O	Capstan current limit control terminal (Output inpedance: Min:1K, TYP:2.5K, Max: 4.0K)	In DA=0V	Low	In DA=0V
12	EEPROM_CS	O	Navigator back-up EE PROM Chip Select terminal Active Low Output	High	Low	High
13	ART.V/H/N	O	Dummy V Output terminal However,during Recording Program Navigator writing, Hi-Z = Fixed.	Low	Low	Low
14	REMOCON	I	Remote control input terminal	In	In	In
15	OPECON_CS	O	CS(Chip Select) signal for TIMER micon Active = " H " Non-active = "L"	(Normal Opera-tion)	Low	High
16	CLOCK.SLAVE(H)	O	1) In test mode: Timer Clock Adj [transmit mode] : H --> L Timer Clock Adj [receive mode] : L --> H 2) Other than test mode : always L	Low	Low	Low
17	DVD_OUT(H)	O	Common Output = For DVD, Output = High Common Output = For VCR, Output = Low As for DVD/VTR during P.Off, Output = Low	Normal Opera-tion	Low	Low
18	VIDEO.H.SW	O	Video Head Switch Signal (During L'/R = "H", during R'/L = "L") Cylinder FG= 1 or 4, Ref time taken as Input time until PGMM time. Timing calculation is performed based on the following. Normal Head: Ref time 10 u Head: Ref time + 120 degree time 1H (=64us) *120 degree time is defined as NTSC:11122us,PAL 13333us	Low	Low	Low
19	AUDIO.H.SW	O	Audio head switch signal	Low	Low	Low
20	D.REC(H)	O	Video Record Current timing terminal	Low	Low	Low
21	TEST2(H)	I	Test mode 2 setting terminal during test 2, Input = High during normal, Input = Low	In	In	In
22	PROGRESSIVE_TV (L)	I	Port for scanning line control: Scanning line 628 : H Scanning line 624 : L	Low	Low	Low
23	ABS_NORM(L)/A.ADJ	I	Serve as Forced Normal Selection Signal & Auto Adjustment Trigger Input Terminal to switch to forced normal audio, Input = Low (ADUBPS, during HiFi Audio Envelope decline Other than that, Input = High	In	In	In
24	AVR(L)	O	Simplified AI Playback Output terminal Initial condition: Input setting 1st Step : "L" setting	Hi-Z	Hi-Z	Hi-Z

25	PB×5(H)	O	Video circuit control signal 5 times mode playback, High Output Other than above, Low Output	Low	Low	Low
26	BIAS(H)	O	Linear Audio record timing terminal When recording linear audio, take (H) as output Output mode: REC,(ADUB,AV-INSERT) When start recording, set BIAS(H), R.REC(H) output range 140~160msec recording time When finish recording, BIAS(L) = Output, D.REC(L) Time = 0 ~ 20 msec	Low	Low	Low
27	S.TAB(L)	I	SAFETY TAB DETECTION INPUT WITH Safety Tab: Input = Low Without Safety Tab: Input = High	In	In	In
28	FM.MUTE(H)	O	Audio Mute Output terminal During P.Off,Head cleaning,Timer Standby,and VPS/PDC Standby, (After canceling these modes,take (L) as the output after delayed time= 600msec. During VV,when tape speed is not 1 time speed, Output = High. (Take (L) as the output, after switching over to 1 time speed,and after delayed time = 600msec. Take (H) as the output During switching over of EE/VV, Output = High after interposing the changing point. (Take (L) as the output, after switching over of EE/VV, and delayed time= 600ms. When J.CLK/A.DEF/NOR terminal is A.DEF, Output = High.	Hi-z	Hi-z	High
29	CH2(L)	O	CH(1/2) selection RF converter terminal When CH1: Open (Hi-Z) When CH2: Output = Low	Hi-Z	Hi-Z	Hi-Z
30	POS.SW4	I	Mecha position Input Refer to the mecha timing chart for Input result data control.	In	In	In
31	POS.SW3	I		In	In	In
32	POS.SW2	I		In	In	In
33	POS.SW1	I		In	In	In
34	RESET(L)	I	Reset terminal	In	In	In
35	32KHz.IN	I	Sublock 32.768KHz osc.input	In	In	In
36	32KHz.OUT	O	Sublock 32.768KHz osc.output	Out	Out	Out
37	5V(D)	-	Digital port Power Vcc (5V)	-	-	-
38	12MHz.IN	I	Main clock 12/16MHz osc.input.	In	In	In
39	12MHz.OUT	O	Main clock 12/16MHz osc.output.	Out	Out	Out
40	GND(OSC)	-	OSC circuit Digital GND.	-	-	-
41	NC		Unused terminal. Fixed Output = Low	Low	Low	Low
42	NC		Unused terminal.Fixed Output = Low.			
43	32K.START(L)	I	Clock source selection terminal during reset start. Connect Vcc(5V), when 12/16 MHz High speed mode Connect to Vss(0V), when 32KHz low speed mode	In	In	In
44	LC.OSC.IN	I	LC osc. Input terminal	In	In	In
45	LC.OSC.OUT	O	LC osc. Output terminal	Out	Out	Out
46	GND	-	Terminal B for mecha testing. (connected to GND)	-	-	-
47	4FC.LPF	I	Internal OSC Connection terminal for sync generator circuit.	In	Low	In
48	FSC.IN	I	Sub carrier (fsc) input terminal for sync generator circuit.	In	Low	In
49	GND(OSD)	-	GND terminal for OSD circuit	-	-	-
50	CVIN	I	Composite Video signal input terminal	In	In	In
51	VSS		Unused terminal. Connected to GND.			
52	CVOUT	O	Composite Video Signal Output Terminal.(Do not use as common port)	Out	Out	Out
53	5V(OSD)	-	OSD circuit Power supply Terminal	-	-	-
54	HLF	I	Slicer LPF Connection Terminal	In	In	In

POS.SW1	POS.SW2	POS.SW3	POS.SW4	Position
0	0	0	0	
0	0	0	1	
0	0	1	0	DOWN
0	0	1	1	R-REW
0	1	0	0	LOAD
0	1	0	1	REV
0	1	1	0	PLAY
0	1	1	1	POFF
1	0	0	0	STOP_R
1	0	0	1	STOP_F
1	0	1	0	
1	0	1	1	
1	1	0	0	FF / REW
1	1	0	1	
1	1	1	0	EJECT
1	1	1	1	

55	VHOLD	I	Capacitor Connection terminal of Slicer Ref Voltage Generator Circuit	In	In	In
56	CVIN(EDS)	I	Slicer Composite Video Signal Input Terminal.	In	In	In
57	GND	-	Mecha Testing terminal A. (Connected to GND)	-	-	-
58	DVDIN(H)		PIN music secondary output = High During CH Selection, Dubbing Input (DC): Output = High Other than above, Output : Low	Low	Low	Low
59	NC	O	Unused terminal.Fixed output as Low.	Low	Low	Low
60	NC		Unused terminal.Fixed output = Low.			
61	VTR(H)/TV(L)	O	TV/VTR Selection control signal When forced TV(L) = (L), Output = (L) When forced TV(L) = (H), If Power Off, Output = (L) When forced TV(L) = (H), If switching over from EE to VV, Output = (H) When forced TV(L) = (H), other than mentioned above, When forced TV(L) = (H), OTHER THAN ABOVE, ANT_SELECT appears. Condition inverse.	Low	Low	Low
62	NC	O	Unused terminal.Fixed output = Low.	Low	Low	Low
63	VBI2	O	When writing navigator: tape navi data mass pulse (special use) Other than writing : Hi-Z (common use)	Low	Low	Low
64	VBI1	O	When writing navigator: tape navi data writing pulse (special use terminal) Other than writing : Hi-Z (common use terminal)	Low	Low	Low
65	EEPROM_OUT	O	Used during Navi back-up mode EEPROM control terminal: data output	Low	Low	Low
66	EEPROM_IN	I	Used during Navi back-up mode EEPROM control terminal: data input	In	In	In
67	EEPROM_CLK	O	Used during Navi back-up mode EEPROM control terminal: clock output	Low	Low	Low
68	IC.DATA.OUT	O	Peripheral IC control Timer-Bus signal: data output	(Normal Opera-tion)	Low	Hi-Z
69	IC.DATA.IN	I	Peripheral IC control Timer-Bus signal: data input	(Normal Opera-tion)	In	In
70	IC.DATA.CLK	O	Peripheral IC control Timer-Bus signal: clock output	(Normal Opera-tion)	Low	Hi-Z
71	IIC.CLK	O	AV1 Chip/FM Audio IC serial communication terminal(IIC).	(Normal Opera-tion)	Low	Hi-Z
72	IIC.DATA	I/O	AV1 Chip/FM Audio IC serial communication terminal(IIC).	(Normal Opera-tion)	Low	Hi-Z
73	256Hz/ROM.CORE	O	Since there are 2 function controls,port function is divided into 2 as shown below. (1) Normal mode/Service mode : Fixed Output(NC) = L (2) Test mode: Judge ROM core confirmation. Decide port function. When ROM core confirm mode: ROM.CORE terminal When other than ROM core confirm mode: Main clock Adjustment Internal Osc. Output terminal (3) Test 2 mode:Main clock Adjustment Internal Osc. Output terminal Control method of each port function is shown as below. [ROM .CORE terminal]When ROM collection setting bit = ON, Output = High When ROM collection setting bit = OFF, Output = Low [Main clock Adjuatment Internal Osc. Output terminal] Output : 256Hz	(Normal Opera-tion)	Low	Low
74	CAP R/F	O	Capstan driver rotating direction control RVS = "High", FWD = "Low"	Low	Low	Low
75	P_ON(H)	O	VTR power control terminal. When VTR = Power Off, and, DVD = Power Off, Ouput = Low When VTR peripheral circuit = Power Off/ Timer Standby, Output = Low Even when apparently Power is Off, if Mecha or Peripheral circuit operation is required, output = High If required: Head cleaning, timer confirmation (VPS/PDC standby, ACS) When J.CLK Syscon serial is ON(during J.CLK mode), even if power is off,	Low	Low	Low
76	CAP.ET	O	Capstan motor control voltage supply terminal When higher than Drive Reference Voltage: Accelerated When lower than Drive Reference Voltage : Current off	High PWM= 0V	Low	High PWM= 0V
77	CYL.ET	O	Cylinder Motor Control Voltage Supply terminal When higher than Driver Reference Voltage: current off When lower than Driver Reference Voltage: accelerated However, during Cylinder Off, Max value of decelerated Voltage is as follow. Normal Control : 3.150V Cylinder Off: 5.000V	Low PWM= 5.000V	Low	Low PWM= 5.000V
78	P.FAIL(L)	I	Power Failure Detection Input terminal Input = "L", Power Failure Mode	In	In	In

79	S.REEL.PULSE	I	Pulse Input terminal from reel sensor	In	In	In
80	T.REEL.PULSE	I	Pulse Input terminal from reel sensor	In	In	In
81	TUNER(H)		Video Input Selection Control Signal Pin music secondary, Output = Low UV/BS tuner CH selection : Output = High Other than above : Output = Low	Low	Low	Low
82	EX.FF/REW(L)	I/O	Control Signal Filter Selection Terminal during FF/REW Control spec shall comply with Mecha FFREW(Hi-Z) output timing. Set Input when deck enters FF/RRW mode. During Stop, due to FF/REW stopping process, switch over to STOP3 first, then STOP is canceled.  However, when starting FF/REW, Filter C addition will be required until it become high speed. Then monitor the CTL Amp Gain(COH bit 0-2) setting value. When 5(=60dB) or 7(=70dB), compulsorily, output = Low.	Low	Low	Low
83	UNLOADING(H)	I/O	Loading Motor Control terminal shall comply with R4 mecha control spec.	Low	Low	Low
84	LOADING(H)	I/O	Loading Motor Control terminal shall comply with R4 mecha control spec.	Low	Low	Low
85	S_VHS PB(H)	I	SVHS mode input Input "H" = S - HVS Input "L" = VHS	In	In	In
86	FG.AMP.OUT	O	Capstan FG Amp Signal Output terminal.	Out	Out	Out
87	FG.AMP.IN	I	Capstan FG signal Input Terminal.	In	In	In
88	GND(A)	-	Analog GND.	-	-	-
89	VSS		Unused terminal. Connected to GND.			
90	CYL.PFG	I	Cylinder P.FG signal Input Terminal.	In	In	In
91	OREF	O	Analog Amp 1/2 Vdd Ref Power Output Terminal	Out	Out	Out
92	IREF	I	Analog Amp 1/2 Vdd Ref Power Input Terminal	In	In	In
93	VSS		Unused terminal. Connected to GND.			
94	CTL.HEAD(-)	I/O	Control head (-)side Input/Output Terminal.	In/Out	In/Out	In/Out
95	CTL.HEAD(+)	I/O	Control head (+)side Input/Output Terminal.	In/Out	In/Out	In/Out
96	CTL.AMP.REF	I	Control Amp Ref Capacitor Connection Terminal	In	In	In
97	PB.CTL.OUT	O	Control Amp Output terminal.	Out	Out	Out
98	5V(A)	-	Analog Amp Power Supply Terminal	-	-	-
99	5V(AD)	-	AD/8 bit DA Ref Power Supply Terminal.	-	-	-
100	VSS		Unused terminal.Connected to 5V.			

443NT [L]	4.43 NTSC Ⓛ
A. COMP	AUDIO COMPONENT SIGNAL
A. COMPO	AUDIO COMPONENT SIGNAL
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ
A. DEF [S]	AUDIO DEFEAT
A. DEF [S] [L]	AUDIO DEFEAT
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ
A. DUB [H]	AUDIO DUBBING Ⓗ
A. ERASE	AUDIO ERASE
A. H. SW	AUDIO HEAD SWITCHING PULSE
A. HEAD [R]	AUDIO HEAD (REC)
A. HEAD [W]	AUDIO HEAD (PLAY)
A. IN [L]	AUDIO INPUT (L)
A. IN [R]	AUDIO INPUT (R)
A. MUT [H]	AUDIO MUTE Ⓗ
A. MUTE [H]	AUDIO MUTE Ⓗ
A. OUT [L]	AUDIO OUTPUT (L)
A. OUT [R]	AUDIO OUTPUT (R)
A. RF OUT	AUDIO RF SIGNAL OUTPUT
A/VS/S. DATA	AV SW/SERIAL DATA
AC ONLINE	AC ONLINE
AC. O/EE. H	AC ONLINE/EE Ⓗ
AFC S C	AFC S CURVE
AFC [S]	AFC S CURVE
AFC. DEF	AFC DEFEAT
ARFC OUT	AUDIO RF SIGNAL OUTPUT
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ/NORMAL
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE
AUDIO IN [L]	AUDIO INPUT (L)
AUDIO IN [R]	AUDIO INPUT (R)
AUDIO OUT [L]	AUDIO OUTPUT (L)
AUDIO OUT [R]	AUDIO OUTPUT (R)
AUDIO SELECT [H]	AUDIO SELECT Ⓗ
AUDIO. L	AUDIO (L)
AUDIO. R	AUDIO (R)
AV CNT	AV CONTROL
AV CTL	AV CONTROL
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK
AV. C.M.	AV CONTROL MODE
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)
AVSW/METER. L	AV SW/LEVEL METER (L)
B MODE. H	B MODE Ⓗ
B.G.P	BURST GATE PULSE
BACKUP 5V	BACK UP 5V
BAND. U.E.	BAND U
BANDVL. D	BAND VL
BI/MI [L]	BILINGUAL/MIX Ⓛ
BIL	BILINGUAL
BIL [L]	BILINGUAL Ⓛ
BIL. [H]	BILINGUAL Ⓗ
BIL/M1 [L]	BILINGUAL Ⓛ
BS CLOCK	BS CLOCK
BS DATA	BS DATA
BS LCH IN	BS L CHANNEL INPUT
BS MIX [H]	BS MIX Ⓗ
BS MON [H]	BS MONITOR Ⓗ
BS MONI [H]	BS MONITOR Ⓗ
BS RCH IN	BS R CHANNEL INPUT
BS VIDEO	BS VIDEO SIGNAL
BS VIDEO/BS1	BS VIDEO SIGNAL
BS [H]	BS Ⓗ
BS. LEVEL	BS LEVEL
BS. M [H]	BS MONITOR Ⓗ
BS/VTR [H]	BS/VTR Ⓗ
BUS CLK	BUS CLOCK
BUS LSN	BUS LISTEN
BUS TLK	BUS TALK
BUZZER	BUZZER
CAP EC	CAPSTAN TORQUE CONTROL
CAP M GND	CAPSTAN MOTOR GND
CAP. ET	CAPSTAN TORQUE CONTROL
CAP. FG1	CAPSTAN FG1 PULSE
CAP. FG2	CAPSTAN FG2 PULSE
CAS. SW	CASSETTE SW
CCN	PLAYBACK CONTROL SIGNAL (–)
CCP	PLAYBACK CONTROL SIGNAL (+)
CHM	CONTROL SIGNAL (+)
CHP	CONTROL SIGNAL (–)
CINEM [L]	CINEMA Ⓛ
CINEMA [L]	CINEMA Ⓛ
CINEMA/MIX	CINEMA/MIX
CKL	RATCH LOCK
CKS	SHIFT LOCK
CL	CLOCK
CLK	CLOCK
CLK (C.G)	CLOCK
CLOCK. IN	CLOCK INPUT
CLP	CLAMP
COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
COLOR [H]	COLOUR Ⓗ
CONV	CONVERTOR
CS	CHIP SELECT
CTL GND	CONTROL GND
CTL HEAD [+]	CONTROL HEAD (+)
CTL HEAD [–]	CONTROL HEAD (–)
CTL [+]	CONTROL HEAD (+)
CTL [–]	CONTROL HEAD (–)
CUE BIAS	CUE BIAS
CURRENT LIM	CURRENT LIMMITER
CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND
D.F.M. REC [H]	DELAIED FM RECORDING Ⓗ
D. FM REC [L]	DELAIED FM RECORDING Ⓛ
D. GND	DIGITAL GND
D. REC [H]	DELAYED RECORDING Ⓗ
D4/S. LED	D4/STILL LED
D4/STILLED	D4/STILL LED
DAC [CLK]	TUNER DAC (CLOCK)
DAC/FSCS	TUNER DAC/FS CHIP SELECT
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ
DATA	DATA
DECODER [L]	DECODER (L)
DECODER [R]	DECODER (R)
DEW	DEW
DEW SNS	DEW SENSOR
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ
E. REC 5V	EXCEPT RECORDING 5V
EC	ERROR TORQUE CONTROL
ECR	ERROR TORQUE CONTROL REFERENCE VOLTAGE
EDT TRIG [L]	EDIT TRIGGER Ⓛ
EDIT [H]	EDIT Ⓗ
EE [H]	EE Ⓗ
EE [H]/INS [M]	EE Ⓗ/INSERT Ⓜ
EE. VV. TR	EE/VV/TRICK PLAY
EJECT. PO	EJECT POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK
ENV. SEL	ENVELOPE SELECT
ENVE. OUT	ENVELOPE OUTPUT
ENVE. SEL	ENVELOPE SELECT
ENV SELECT	ENVELOPE SELECT
EP [H]	LP Ⓗ
EP/LP [H]	LP Ⓗ
EP/LP/SP	LP/SP
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ
EPROMCS	EPROM CHIP SELECT
EX. REC 5V	EXCEPT RECORDING 5V
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ
FG1 IN	FG1 PULSE INPUT
FG2 IN	FG2 PULSE INPUT
FILTER ADJUSTMENT	FILTER ADJUSTMENT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ
FM MUT [H]	FM AUDIO MUTE Ⓗ
FM MUTE [H]	FM AUDIO MUTE Ⓗ
FM OUT [L]	FM OUTPUT (L)
FM OUT [R]	FM OUTPUT (R)
FM PACK OUT [L]	FM PACK OUTPUT (L)
FM PACK OUT [R]	FM PACK OUTPUT (R)
FM/BS SEL [L]	FM/BS SELECT (L)
FM/BS SEL [R]	FM/BS SELECT (R)
FS. CLK	FS CLOCK
FUL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E [H]	FULL ERASE HEAD ON Ⓗ

FULL. E. 12V	FULL ERASE 12V
GND [A]	GND (ANALOG)
GND [TU]	GND (TUNER)
GND/N. SW. 12V	GND/NON SW 12V
H. SYNC	HORIZONTAL SYNC
H. AMP. SW	HEAD AMP SW PULSE
H. P <R>	HEAD PHONE (R)
H. P <L>	HEAD PHONE (L)
H. P GND	HEAD PHONE GND
H. P OUT [L]	HEAD PHONE OUTPUT (L)
H. P OUT [R]	HEAD PHONE OUTPUT (R)
H. SW	HEAD SW PULSE
HEAD PHONE [L]	HEAD PHONE (L)
HEAD PHONE [R]	HEAD PHONE (R)
HEAD SW	HEAD SW
HEATER [+]	HEATER (+)
HEATER [–]	HEATER (–)
HSS	HORIZONTAL SYNC SIGNAL
HTR [+]	HEATER (+)
HTR [–]	HEATER (–)
I RFE	REFERENCE CURRENT
ICL	CONTROL AGC CIRCUIT
IF	INTERMEDIATE FREQUENCY
IN SELA1	INPUT SELECT A1 POSITION
IN SELA2	INPUT SELECT A2 POSITION
IN SELA3	INPUT SELECT A3 POSITION
INS L/R [L]	INSERT Lch/Rch Ⓛ
INS. [H]	INSERT Ⓗ
INSEL A1	INPUT SELECT A1 POSITION
INSEL A2	INPUT SELECT A2 POSITION
INSERT	INSERT
INSERT [H]	INSERT Ⓗ
IO CS	INPUT/OUTPUT CHIP SELECT
JOG1	JOG1
JOG S3 LED/FOWRD	JOG LED/FORWARD LED
JOG/F. LED	JOG LED/FORWARD LED
JSB [H]	JSB Ⓗ
JST. CLCK	JUST CLOCK
JST. CLK	JUST CLOCK
JST. CLOCK	JUST CLOCK
L. OUT	Lch OUTPUT
L. CH [H]	Lch Ⓗ
L. CH [L]	Lch Ⓛ
LED (MAIN)	LED (MAIN)
LED (STEREO)	LED (STEREO)
LED (SUB)	LED (SUB)
LED CKL	LED SERIAL CLOCK
LED CKS	LED SERIAL CLOCK
LED DATA	LED SERIAL DATA
LINE IN 1 [L]	LINE INPUT 1 (L)
LINE IN 1 [R]	LINE INPUT 1 (R)
LINE IN 2 [L]	LINE INPUT 2 (L)
LINE IN 2 [R]	LINE INPUT 2 (R)
LINE IN V	LINE INPUT VIDEO
LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)
LINE OUT [L]	LINE OUTPUT (L)
LINE OUT [R]	LINE OUTPUT (R)
LP [H]	LP Ⓗ
LPTRI [L]	LP TRICK PLAY Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING
M GND	MOTOR GND
M REG	MOTOR REGULATOR
MAIN OUT	MAIN OUTPUT
MAIN [L]	MAIN Ⓛ
MAIN/MONO	MAIN/MONAURAL
MAX IN	MAXIMAM INPUT
MES [H]	MESECAM Ⓗ
MESE [H]	MESECAM Ⓗ
MESE [L]	MESECAM Ⓛ
METER 5V	LEVEL METER 5V
METER [L]	LEVEL METER (L)
METER [R]	LEVEL METER (R)
METER. L/AVS	LEVEL METER (L)
METER. R/AVC	LEVEL METER (R)
MI/BI [L]	MIX Ⓗ/BILIGUAL
MIC GND	MIC GND
MIC IN	MIC INPUT
MIC IN [L]	MIC INPUT (L)
MIC IN [R]	MIC INPUT (R)
MIC [H]	MIC Ⓗ
MIX [H]	MIX Ⓗ
MIX [H]/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINE	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MN. H/M. L	MONAURAL Ⓗ/MAIN Ⓛ
MN. H/MAI. L	MONAURAL Ⓗ/MAIN Ⓛ
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ
MODE SEL	AUDIO MODE SELECT
MODE SW	AUDIO MODE SW
MODE. S. IN	AUDIO MODE SELECT INPUT
MODE. S. OUT	AUDIO MODE SELECT OUTPUT
MONO [H]	MONAURAL Ⓗ
MONO [H]/MAIN [L]	MONAURAL Ⓗ/MAIN Ⓛ
MONO2 [L]	MONAURAL 2
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM Ⓛ)
MOTOR GND	MOTOR GND
MUTE	MUTE
N. A. REC [L]	NORMAL AUDIO RECORDING
N. SW 12V	NON SW 12V
N. SW. 5. DET	NON SW 5V DETECT
NICAM	NICAM
NICAM [L]	NICAM Ⓛ
NOL [H]	PAL Ⓗ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ
NORMAL [H]	NORMAL Ⓗ
NR BIAS	NR BIAS
NTSC [L]	NTSC Ⓛ
OCH	CONTROL AGC CIRCUIT
OUT	OUTPUT

P-OFF [H]	POWER OFF Ⓗ
P-OFF [L]	POWER OFF Ⓛ
P. FAIL	POWER FAILURE DETECT
P. OFF [H]	POWER OFF Ⓗ
P. OFF [L]	POWER OFF Ⓛ
PAL [H]	PAL Ⓗ
PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓗ
PB ADJ OUT	PLAYBACK ADJUST OUTPUT
PB OUT	PLAYBACK OUTPUT
PB. H	PLAYBACK Ⓗ
PFG	PG/FG
PHOTSN +B	PHOTO SENSOR +B
PICT. CNT	PICTURE CONTROL
PLAY LED/RVS LED	PLAY LED/REVERSE LED
PLAY. PO	PLAY POSITION
PLAY/R. LED	PLAY LED/REVERSE LED
PLY/DEW	PLAY/DEW Ⓗ
POWER OFF [L]	POWER OFF Ⓛ
PREROLL [H]	PREROLL Ⓗ
PWRFAIL	POWER FAILURE DETECT
R. CH [H]	Rch Ⓗ
R. CH [L]	Rch Ⓛ
R. ST	RESET
R/S/F	REVERSE Ⓗ/STOP Ⓜ/FORWARD Ⓛ
RCH [H]	Rch Ⓗ
REC 12V	RECORDING 12V
REC CHROMA	RECORDING CHROMINANCE SIGNAL
REC H	RECORDING Ⓗ
REC IN	RECORDING INPUT
REC OUT [L]	RECORDING OUTPUT Ⓛ
REC START	RECORDING START
REC VR [C]	RECORDING VOLUME (COMMON)
REC VR [L]	RECORDING VOLUME (L)
REC VR [R]	RECORDING VOLUME (R)
REC Y	RECORDING LUMINANCE SIGNAL
REC [H]	RECORDING Ⓗ
REC. C	RECORDING CHROMINANCE SIGNAL
REC. Y	RECORDING LUMINANCE SIGNAL
REC/EE CTL	RECORDING/EE CONTROL
REEL-T	REEL PULSE (TAKE-UP)
REEL-S	REEL PULSE (SUPPLY)
REGULATOR FILTER	REGULATOR FILTER
RESET	RESET
REV M F/R	REVIEW MOTOR FORWARD/REVERSE
REV M V1	REVIEW MOTOR V1
REV M V2	REVIEW MOTOR V2
REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
REV MOTOR V1	REVIEW MOTOR V1
REV MOTOR V2	REVIEW MOTOR V2
REV MOTOR [+]	REVIEW MOTOR (+)
REV MOTOR [–]	REVIEW MOTOR (+)
REV. M. GND	REVIEW MOTOR GND
RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT
RF Y	RF LUMINANCE SIGNAL
RF. Y. IN	RF LUMINANCE SIGNAL INPUT
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT
ROTAR. SW	ROTARY SW
ROTARY	ROTARY SW
RST	RESET
RST [L]	RESET Ⓛ
Rch/INST	Rch/INSERT
S IN	SERIAL DATA INPUT
S OUT	SERIAL DATA OUTPUT
S-PHOTO	SUPPLY PHOTO TRANSISTOR
S-RL. PLS	SUPPLY REEL PULSE
S. CLK	SERIAL CLOCK
S. CLK/AV	SERIAL CLOCK/AV
S. DATA	SERIAL DATA
S. DATA/A	SERIAL DATA
S. PHOTO	SUPPLY PHOTO TRANSISTOR
S. TAB [L]	SAFETY TAB SW ON Ⓛ
S/P/N	SECAM/PAL/NTSC
SC IN	SERIAL CLOCK INPUT
SC OUT	SERIAL CLOCK OUTPUT
SCK SELECT	SERIAL CLOCK SELECT
SEL OUT [L]	SELECT OUTPUT (L)
SEL OUT [R]	SELECT OUTPUT (R)
SHUTTLE 1	SHUTTLE 1
SIF	SOUND INTERMEDIATE FREQUENCY
SLMUT [H]	INPUT SELECT MUTE Ⓗ
SLNID [+]	SOLENOID (+)
SLNID [–]	SOLENOID (–)
SLW TR. MM	SLOW TRACKING MONO MULTI
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE
SNS. GND	SENSOR GND
SOFT [H]	SOFT TAPE PLAY Ⓗ
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ/NORMAL Ⓗ
SOLENOID ON [L]	SOLENOID ON Ⓛ
SP [H]	SP Ⓗ
SP/L/SLP	SP/LP
SSS [L]	SLOW/STILL/STOP
STEREO LED	STEREO LED
STEREO [H]	STEREO Ⓗ
STEREO [L]	STEREO Ⓛ
STOP. PO	STOP POSITION
STOP/5V	STOP POSITION/5V
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT
STOP1/PAL:ST	STOP1 POSITION/PAL
STOP2. PO	STOP 2 POSITION
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW
STREO [H]	STEREO Ⓗ
SUB BIAS	SUB BIAS
SUB. SW	SUB SW
SVHS CAS [L]	S-VHS CASSETTE Ⓛ
SW. 5. DET	SW 5V DETECT
SYNC [L]	SYNC Ⓛ
SYSCON 5V	SYSTEM CONTROL 5V
SYSTEM	SYSTEM SW
T-PHOTO	TAKE-UP PHOTO TRANSISTOR
T-RL. PLS	TAKE-UP REEL PULSE
T. BUSCLK	TIMER BUS CLOCK
T. BUSLSN	TIMER BUS LISTEN
T. BUSTLK	TIMER BUS TALK
T. END [L]	TAPE END Ⓛ
T. PHOTO	TAKE-UP PHOTO TRANSISTOR
TAPE END [L]	TAPE END Ⓛ
TAPE END [L]/CAM	TAPE END Ⓛ/CAMERA PAUSE
TEST	TEST MODE
TPZ	TRAPEZOIDAL WAVE CIRCUIT
TRIC [L]	TRIC PLAY Ⓛ
TRICK [L]	TRIC PLAY Ⓛ
TRK. ENV	AUTO TRACKING ENVELOPE DETECT
TU. AUDIO	TUNER AUDIO
TU. GND	TUNER GND
TU. V. IN	TUNER VIDEO SIGNAL INPUT
TU. VIDEO	TUNER VIDEO
TUN NOR IN	TUNER NORMAL INPUT
TUN R	TUNER AUDIO (R)
TUN. AUDIO IN	TUNER AUDIO INPUT
TUNER 12V	TUNER 12V
TUNER L	TUNER AUDIO (L)
TUNER V IN	TUNER VIDEO SIGNAL INPUT
TUNER [L]	TUNER AUDIO (L)
TUNER [N]	TUNER AUDIO (NORMAL)
TUNER [R]	TUNER AUDIO (R)
TUNER. 12	TUNER 12V
TUOFF [H]	TUNER OFF Ⓗ
TV. AUDIO	TV AUDIO
TV/VTR	TV/VTR
TXTON [L]	TEXT ON Ⓛ
U. REG45V	UNREGULATOR 45V
UNREG	UNREGULATOR
UNREG19V	UNREGULATOR 19V
V. REF	REFERENCE VOLTAGE
V. EE [H]	VIDEO EE Ⓗ
V. EE [L]	VIDEO EE Ⓛ
VCO REF	REFERENCE OSCILLATER
VD. IN	VIDEO SIGNAL INPUT
VD. OUT	VIDEO SIGNAL OUTPUT
VIDEO EE [L]	VIDEO EE Ⓛ
VIDEO IN	VIDEO SIGNAL INPUT
VIDEO OUT	VIDEO SIGNAL OUTPUT
VM	MOTOR VOLTAGE
VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
VSS	VERTICAL SYNC SIGNAL
VTR [H]	VTR Ⓗ
VTR. 12V	VTR 12V
X IN	OSCILLATOR INPUT
X OUT	OSCILLATOR OUTPUT

For your safety please read the following text carefully

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS 1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstance should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚.

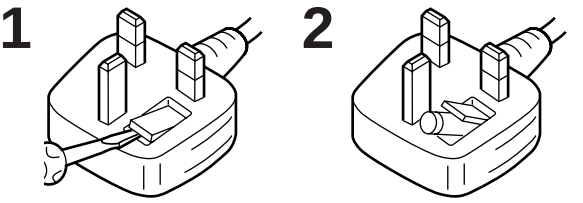
How to replace the Fuse

- There are two types of the AC Mains Lead assembly: **A** and **B** as shown below.

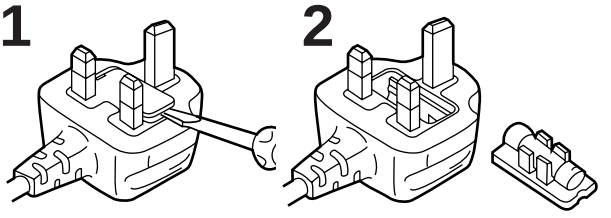
1 Open the fuse compartment with a screwdriver.

2 Replace the fuse and fuse cover.

TYPE A



TYPE B



SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

Ref. No.	IC1511					IC1512														
MODE	1	2	3	4		1	2	3	4											
STOP	1.2	2.4	5.0	0.0		0.0	1.3	5.0	0.0											
PLAY	1.2	2.4	3.5	0.0		0.0	1.3	5.0	0.0											
REC	1.2	2.4	3.5	0.0		0.0	1.3	4.9	0.0											
F.F	1.2	2.4	2.4	0.0		0.0	1.3	2.5	0.0											
REW	1.2	2.4	2.3	0.0		0.0	1.3	2.4	0.0											
Ref. No.	IC2501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	12.2	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.9	1.7	1.6	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
PLAY	12.3	0.3	0.0	0.3	0.0	0.0	16.3	0.0	2.8	1.7	1.7	0.7	1.4	2.4	2.5	2.5	2.5	1.3	5.0	3.6
REC	12.2	0.3	0.0	0.3	0.0	0.0	16.3	0.0	2.9	1.6	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
F.F	12.2	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.9	1.7	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
REW	12.3	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.8	1.7	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3..9
Ref. No.	IC2501																			
MODE	21	22	23	24	25															
STOP	12.2	3.5	3.5	0.0	3.5															
PLAY	12.3	3.6	3.6	0.0	3.6															
REC	12.2	3.6	3.5	0.0	3.6															
F.F	12.3	3.5	3.5	0.0	3.5															
REW	12.3	3.6	3.8	0.0	3.6															
Ref. No.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0.0	2.6	4.9	4.9	5.0	5.0	4.9	4.9	3.3	4.9	0.0	0.0	0.0	5.1	3.0	0.0	0.0	2.5	0.0	0.0
PLAY	0.0	2.6	4.9	4.9	5.0	5.0	4.9	4.9	4.0	4.9	4.9	0.0	0.0	5.1	3.0	0.0	0.0	2.5	2.5	0.0
REC	0.0	2.6	4.9	4.9	5.0	5.0	4.9	4.9	3.3	4.9	4.9	0.0	0.0	5.1	3.0	0.0	0.0	2.5	0.0	4.9
F.F	0.0	2.6	4.9	4.9	5.0	5.0	4.9	4.9	3.3	4.9	4.9	4.9	0.0	5.1	3.0	0.0	0.0	2.5	0.0	0.0
REW	0.0	2.6	4.9	4.9	5.0	5.0	4.9	4.9	3.3	4.9	4.9	4.9	0.0	5.1	3.0	0.0	0.0	2.5	0.0	0.0
Ref. No.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	4.9	0.0	4.4	2.0	0.0	0.0	0.0	0.1	0.0	0.0	4.9	4.9	4.9	4.9	-	-	4.9	-	-	0.0
PLAY	4.9	0.0	4.4	2.0	0.0	0.0	0.0	0.1	0.0	0.0	4.9	4.9	0.0	5.0	-	-	5.0	-	-	0.0
REC	4.9	0.0	4.4	2.0	0.0	4.9	0.0	0.1	0.0	0.0	0.0	4.9	0.0	4.9	-	-	4.9	-	-	0.0
F.F	4.9	0.0	4.4	2.0	0.0	0.0	0.0	0.1	0.0	4.9	4.9	0.0	0.0	4.9	-	-	4.9	-	-	0.0
REW	4.9	0.0	4.4	2.0	0.0	0.0	0.0	0.1	0.0	4.9	4.9	0.0	0.0	4.9	-	-	4.9	-	-	0.0
Ref. No.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	4.9	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.1	2.1	1.8	2.0	0.0	0.0	0.0	0.0
PLAY	0.0	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.2	2.1	1.8	2.0	0.0	0.0	0.0	0.0
REC	4.9	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.1	2.1	1.8	2.0	0.0	0.0	0.0	0.0
F.F	0.0	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.2	2.1	1.8	2.0	0.0	0.0	0.0	0.0
REW	0.0	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.2	2.1	1.8	2.0	0.0	0.0	0.0	0.0
Ref. No.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0.0	0.7	0.0	0.0	0.0	0.0	0.0	4.0	4.0	4.1	4.0	2.5	2.4	0.0	4.9	0.0	2.4	5.1	5.0	0.2
PLAY	0.0	0.7	0.0	0.0	0.0	0.0	0.0	4.0	4.0	4.1	4.0	2.5	2.4	0.0	4.9	2.5	2.4	5.2	0.1	4.2
REC	0.0	0.7	0.0	0.0	0.0	0.0	0.0	4.1	4.1	4.1	4.0	2.5	2.4	0.0	4.9	2.5	2.4	5.1	3.8	5.0
F.F	0.0	0.7	0.0	0.0	0.0	0.0	0.0	4.1	4.1	4.1	4.0	2.5	2.4	0.0	4.9	2.8	2.4	5.1	2.4	2.4
REW	0.0	0.7	0.0	0.0	0.0	0.0	0.0	4.1	4.1	4.1	4.0	2.5	2.4	0.0	4.9	4.9	2.4	5.1	2.4	2.4
Ref. No.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.3	1.3	2.6	2.6	0.0	2.5	2.5	2.5	2.5	5.1	5.1	2.9
PLAY	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.3	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.6	5.1	5.2	2.9
REC	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.3	1.3	2.6	2.6	0.0	2.3	2.7	2.5	2.5	5.1	5.1	2.9
F.F	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.5	5.1	5.1	2.9
REW	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.7	5.2	5.2	2.9

Ref. No.	IC6201						IC6301					
MODE	1	2	3	4	5		1	2	3	4	5	6
STOP	5.1	5.1	0.0	-	-		6.1	0.0	4.9	1.2	0.0	5.0
PLAY	5.2	5.1	0.0	-	-		6.1	0.0	4.9	1.2	0.0	5.0
REC	5.1	5.1	0.0	-	-		6.0	0.0	4.9	1.2	0.0	5.0
F.F	5.2	5.2	0.0	-	-		6.5	0.0	4.9	1.2	0.0	5.0
REW	5.1	5.2	0.0	-	-		6.3	0.0	4.9	1.2	0.0	5.0

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

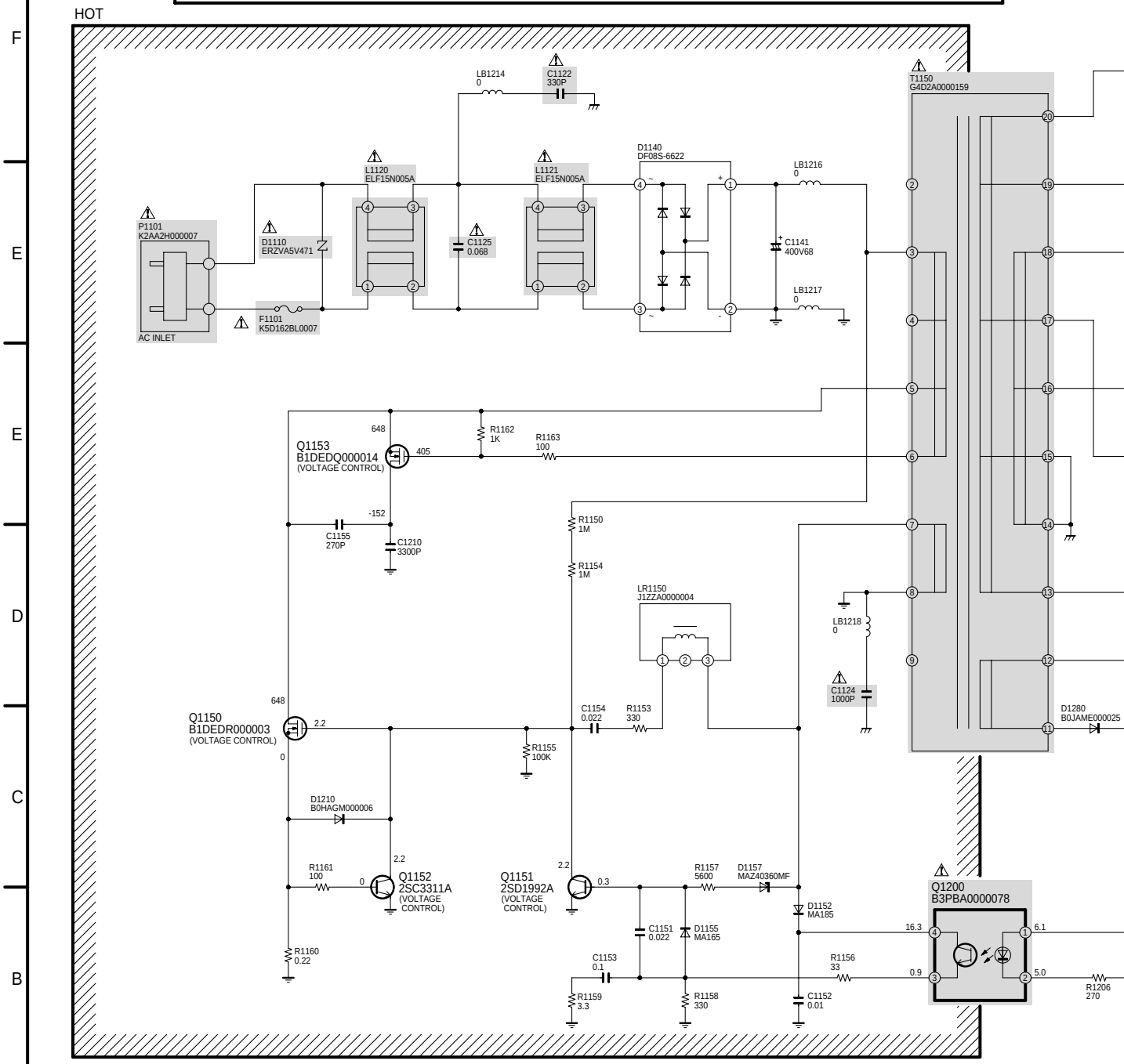
Ref. No.	Q1501				Q1502				Q7701											
MODE	+	–			+	–			E	C	B									
STOP	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
PLAY	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
REC	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
F.F	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
REW	4.9	0.0			5.1	0.0			2.3	0.0	1.7									

16 SCHEMATIC DIAGRAMS

16.1. POWER SCHEMATIC DIAGRAM

CAUTION

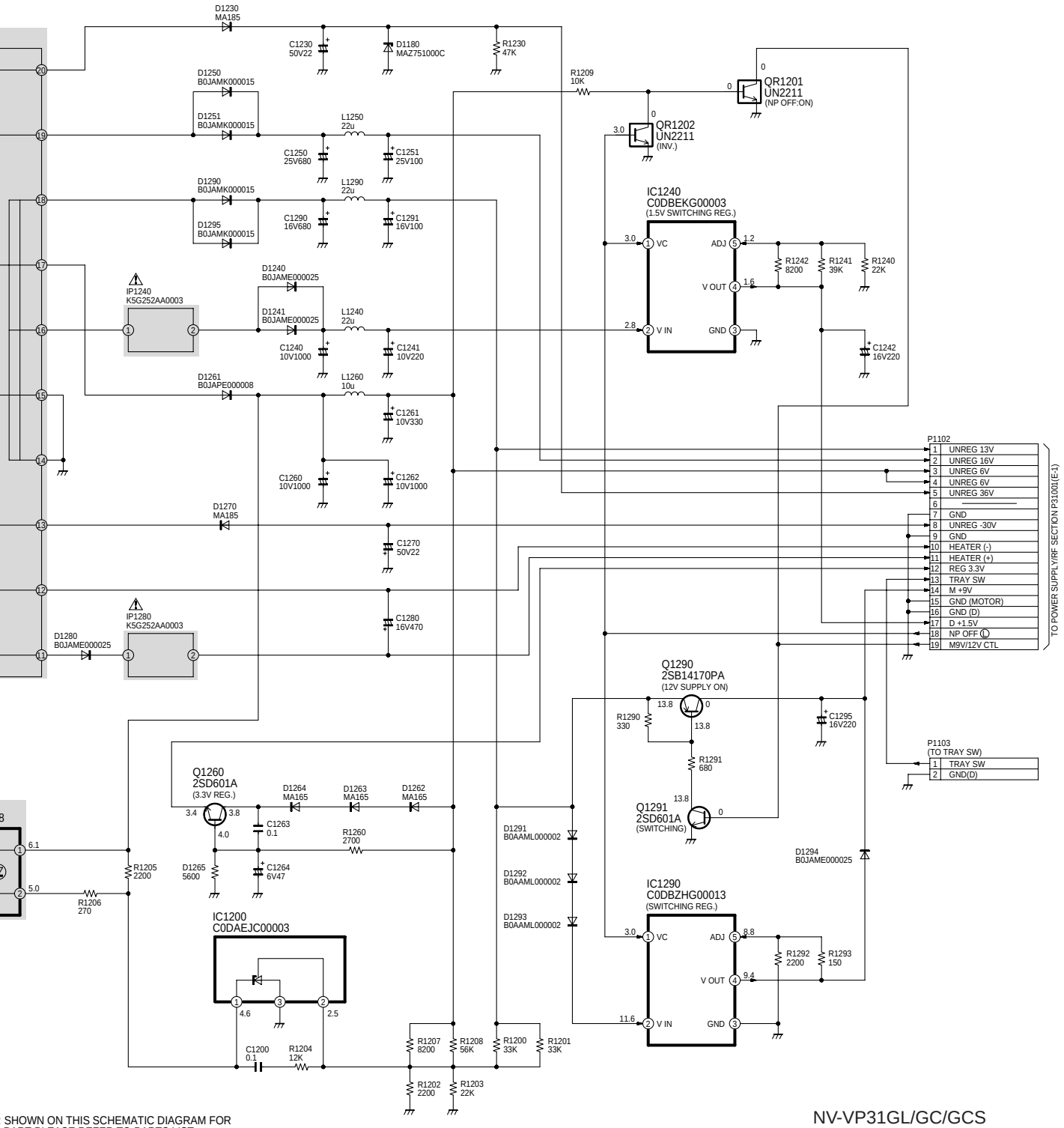
THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.



NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚
NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCH
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER
NOTE:THE MEASURMENT MODE OF THE DC VOLTAGE ON THI

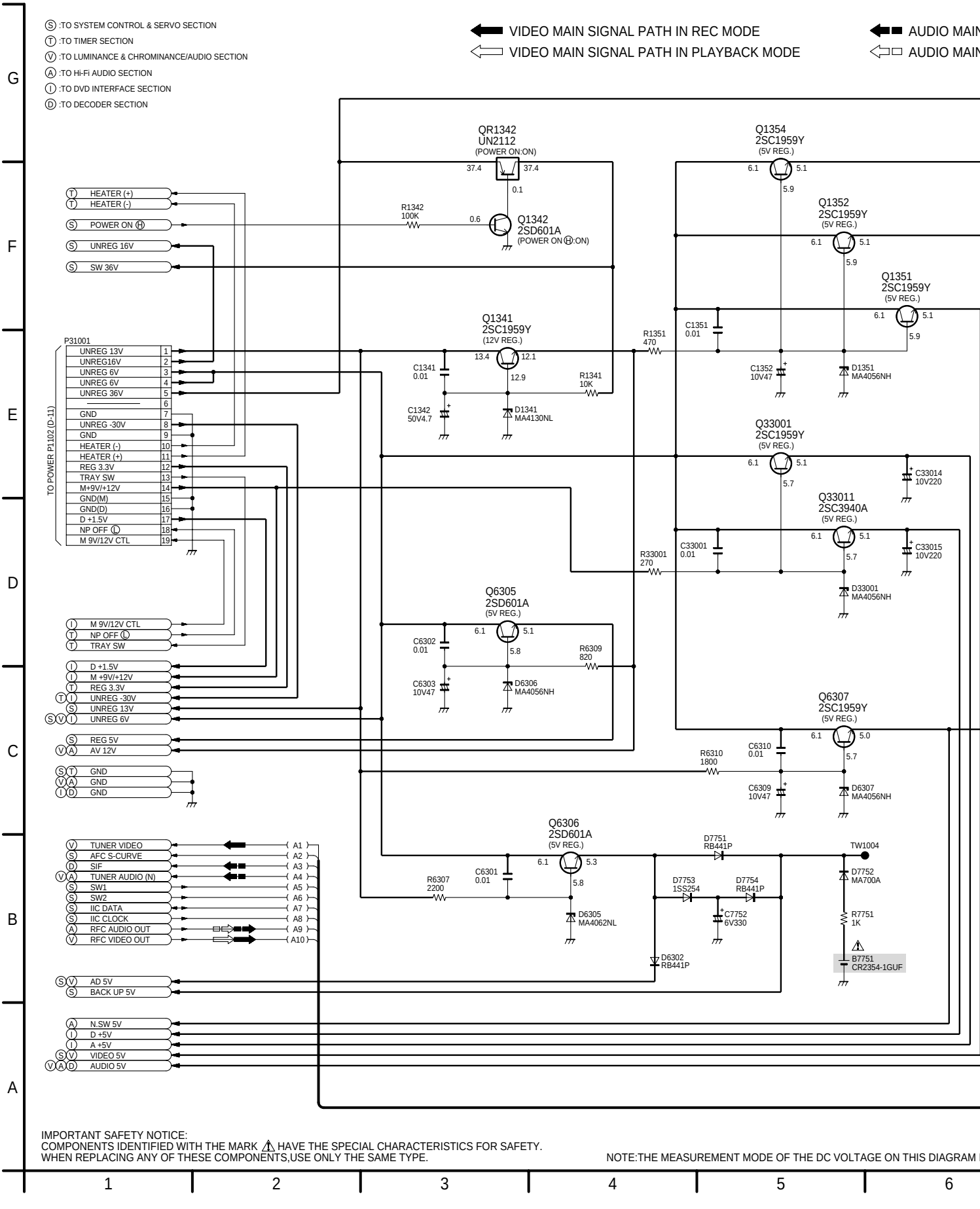


SHOWN ON THIS SCHEMATIC DIAGRAM FOR
PART,PLEASE REFER TO PARTS LIST.
E DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NV-VP31GL/GC/GCS
POWER SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10 | 11 | 12

16.2. POWER SUPPLY/RF SECTION IN MAIN SCHEMATIC DIAGRAM

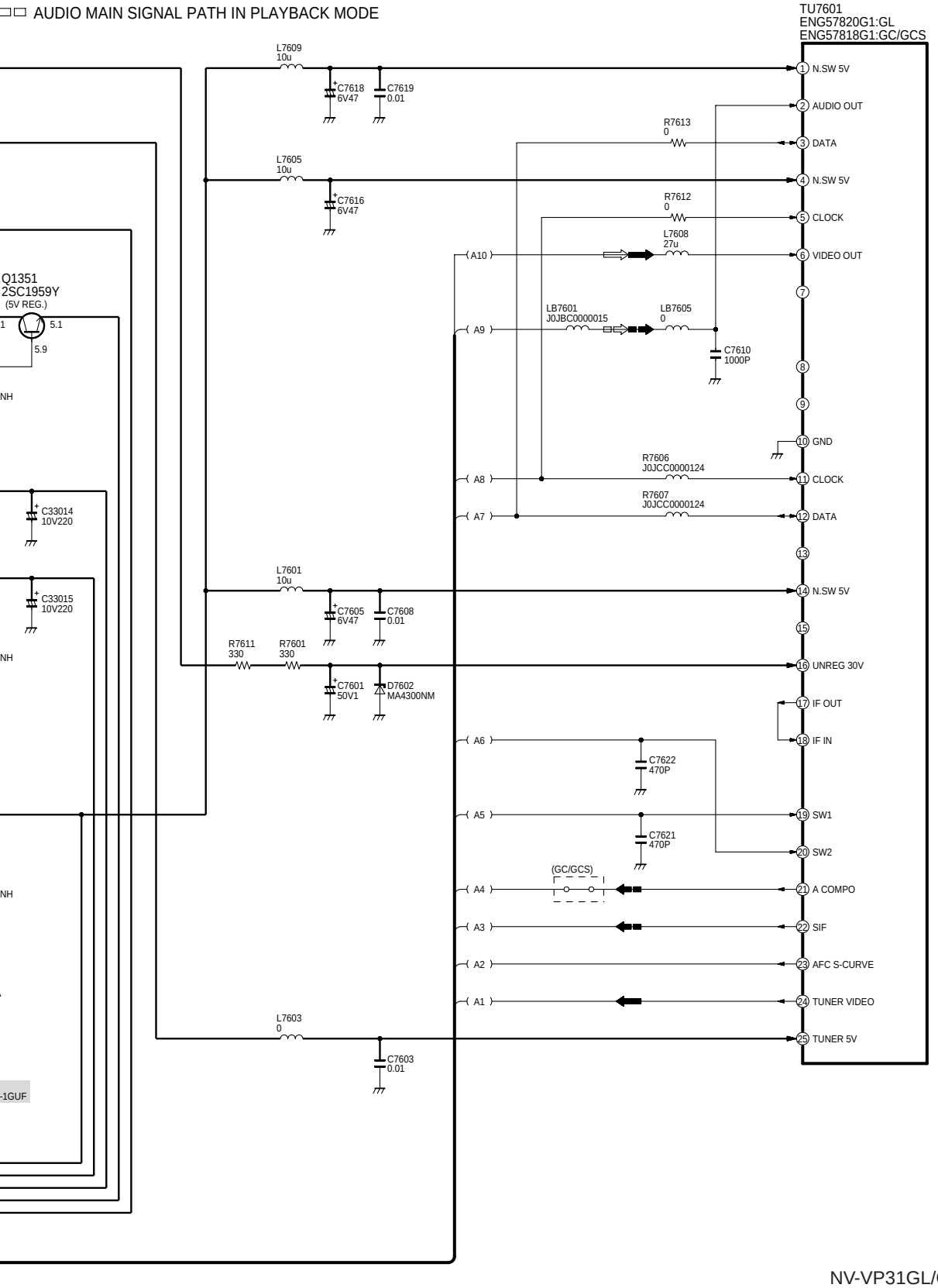


IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



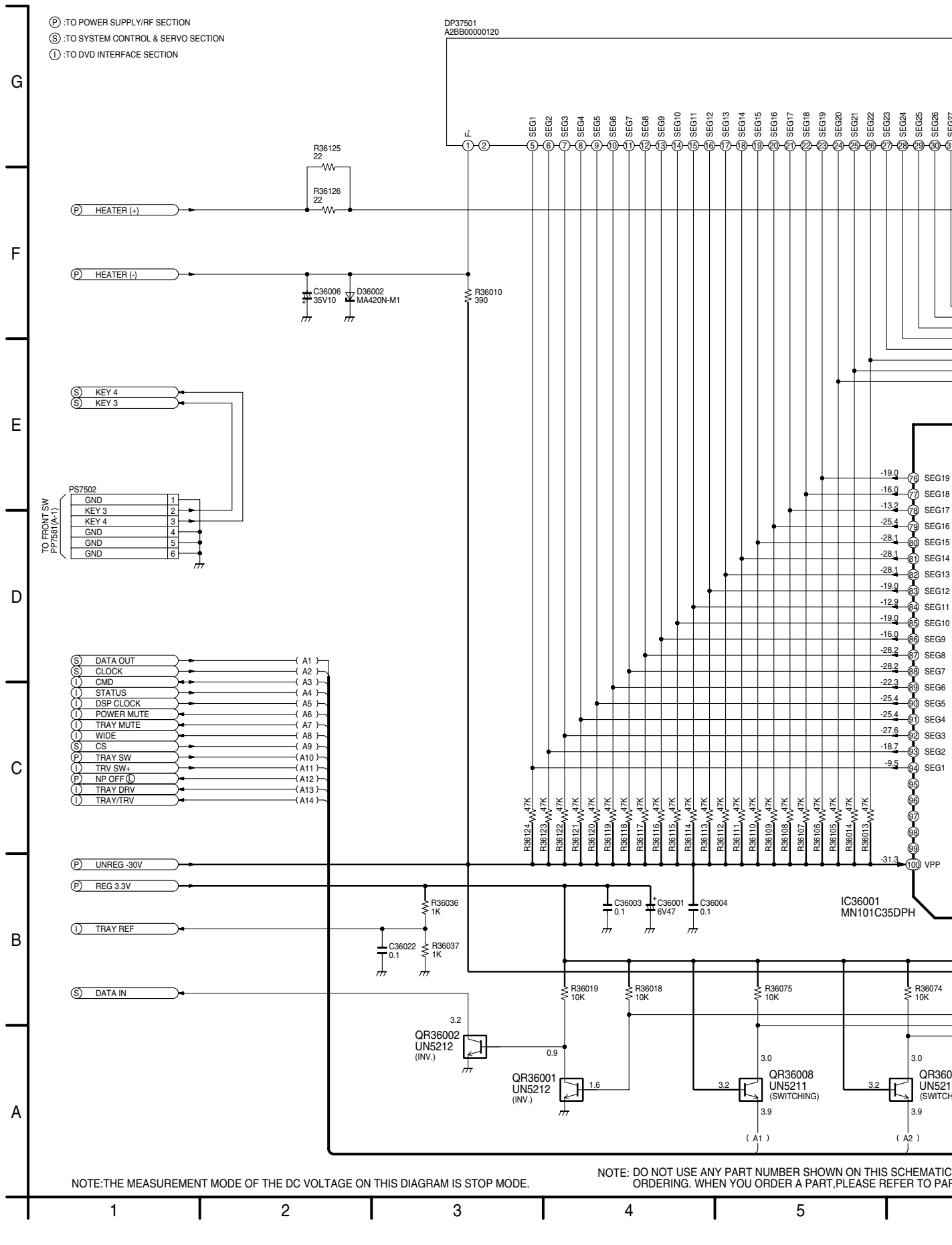
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

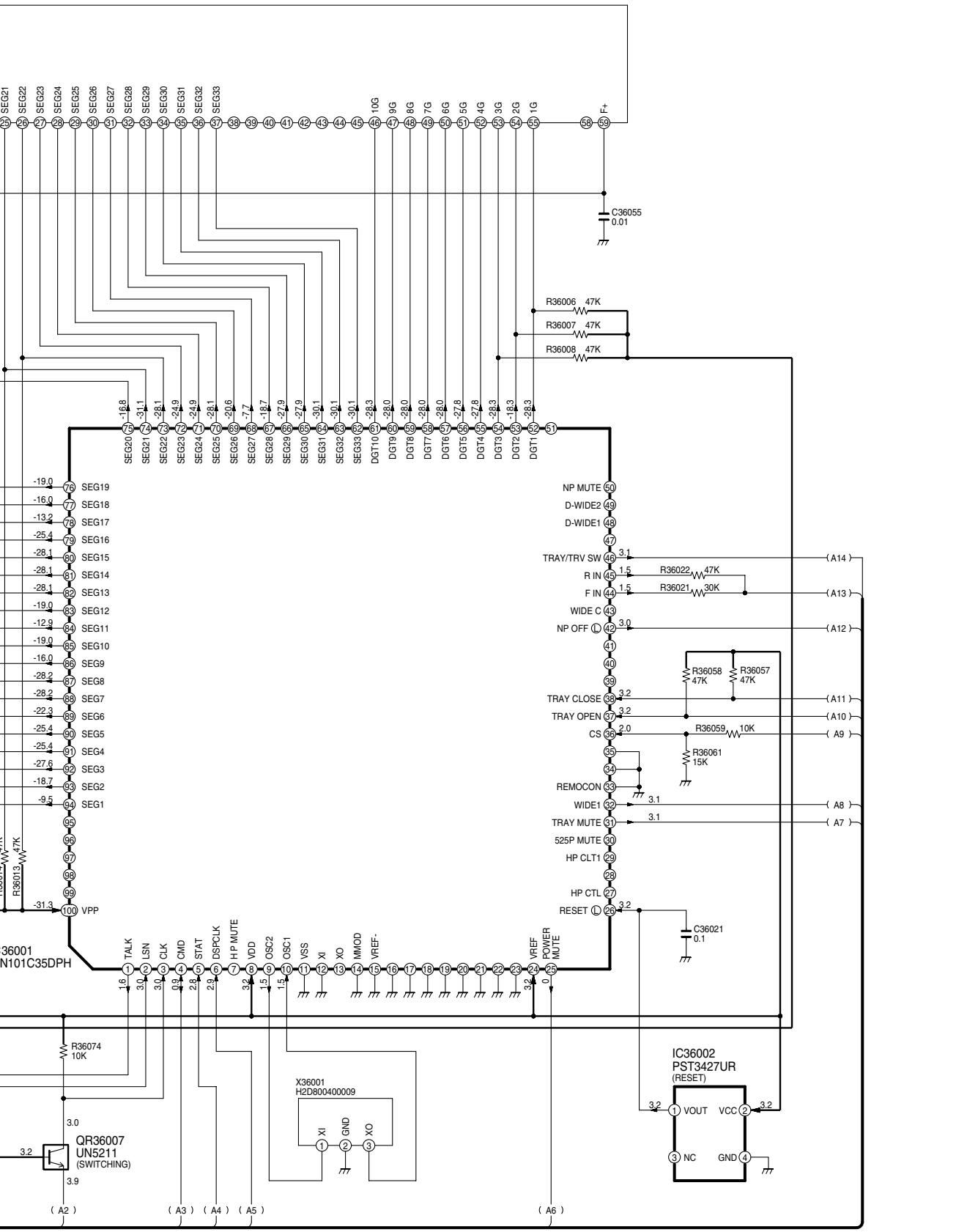
E ON THIS DIAGRAM IS STOP MODE.

NV-VP31GL/GC/GCS
POWER SUPPLY/RF SECTION
SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10

16.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM


Ⓟ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓘ :TO DVD INTERFACE SECTION
DP37501
A2BB00000120
F-
SEG1 SEG2 SEG3 SEG4 SEG5 SEG6 SEG7 SEG8 SEG9 SEG10 SEG11 SEG12 SEG13 SEG14 SEG15 SEG16 SEG17 SEG18 SEG19 SEG20 SEG21 SEG22 SEG23 SEG24 SEG25 SEG26
R36125 22
R36126 22
HEATER (+)
HEATER (-)
C36006 35V10
D36002 MA420N-M1
R36010 390
KEY 4
KEY 3
PS7502
TO FRONT SW PP7581(A-1)
GND
KEY 3
KEY 4
GND
GND
GND
DATA OUT
CLOCK
CMD
STATUS
DSP CLOCK
POWER MUTE
TRAY MUTE
WIDE
CS
TRAY SW
TRV SW+
NP OFF Ⓛ
TRAY DRV
TRAY/TRV
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14
R36124 R36123 R36122 R36121 R36120 R36119 R36118 R36117 R36116 R36115 R36114 R36113 R36112 R36111 R36110 R36109 R36108 R36107 R36106 R36105 R36014 R36013 47K
-19.0 -16.0 -13.2 -25.4 -28.1 -28.1 -28.1 -19.0 -12.9 -19.0 -16.0 -28.2 -28.2 -22.3 -25.4 -25.4 -27.6 -18.7 -9.5 -31.3
76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
SEG19 SEG18 SEG17 SEG16 SEG15 SEG14 SEG13 SEG12 SEG11 SEG10 SEG9 SEG8 SEG7 SEG6 SEG5 SEG4 SEG3 SEG2 SEG1 VPP
UNREG -30V
REG 3.3V
TRAY REF
DATA IN
R36036 1K
C36022 0.1
R36037 1K
C36003 0.1
C36001 6V47
C36004 0.1
IC36001
MN101C35DPH
R36019 10K
R36018 10K
R36075 10K
R36074 10K
QR36002 UN5212 (INV.)
QR36001 UN5212 (INV.)
QR36008 UN5211 (SWITCHING)
3.2 0.9 1.6 3.0 3.9
(A1)
(A2)
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC
ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PAR
G F E D C B A
1 2 3 4 5

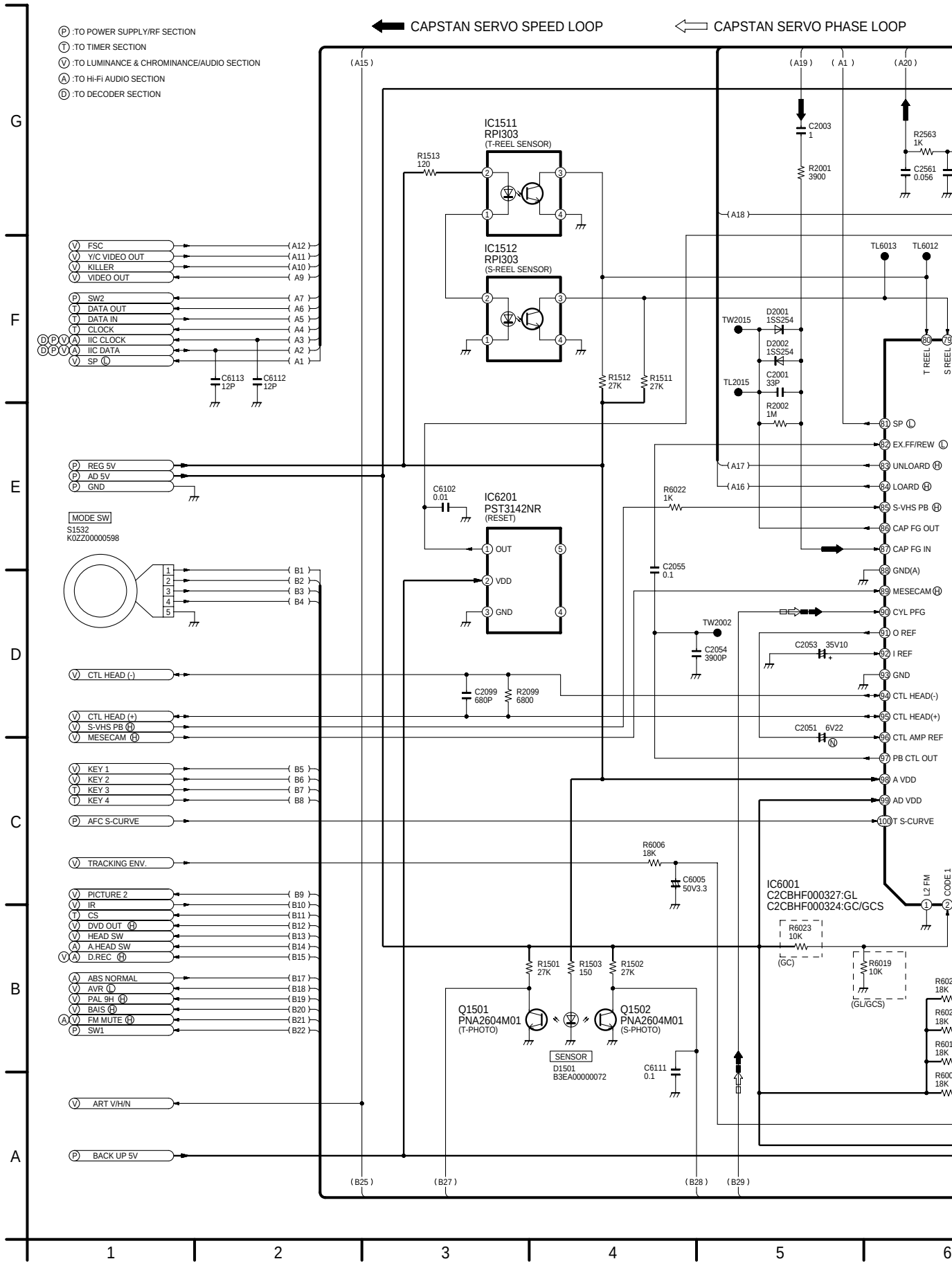

SEG21 SEG22 SEG23 SEG24 SEG25 SEG26 SEG27 SEG28 SEG29 SEG30 SEG31 SEG32 SEG33 10G 9G 8G 7G 6G 5G 4G 3G 2G 1G F+
C36055 0.01
R36006 47K
R36007 47K
R36008 47K
SEG20 SEG21 SEG22 SEG23 SEG24 SEG25 SEG26 SEG27 SEG28 SEG29 SEG30 SEG31 SEG32 SEG33 DGT10 DGT9 DGT8 DGT7 DGT6 DGT5 DGT4 DGT3 DGT2 DGT1
SEG19 SEG18 SEG17 SEG16 SEG15 SEG14 SEG13 SEG12 SEG11 SEG10 SEG9 SEG8 SEG7 SEG6 SEG5 SEG4 SEG3 SEG2 SEG1
NP MUTE D-WIDE2 D-WIDE1 TRAY/TRV SW R IN F IN WIDE C NP OFF TRAY CLOSE TRAY OPEN CS REMOCON WIDE1 TRAY MUTE 525P MUTE HP CLT1 HP CTL RESET
R36022 47K
R36021 30K
R36058 47K
R36057 47K
R36059 10K
R36061 15K
A14 A13 A12 A11 A10 A9 A8 A7
R36013 47K
VPP
TALK LSN CLK CMD STAT DSPCLK H P MUTE VDD OSC2 OSC1 VSS XI XO MMOD VREF- VREF POWER MUTE
C36021 0.1
R36074 10K
X36001 H2D800400009
XI GND XO
IC36002 PST3427UR (RESET)
VOUT VCC NC GND
QR36007 UN5211 (SWITCHING)
A2 A3 A4 A5 A6

ON THIS SCHEMATIC DIAGRAM FOR
EASE REFER TO PARTS LIST.

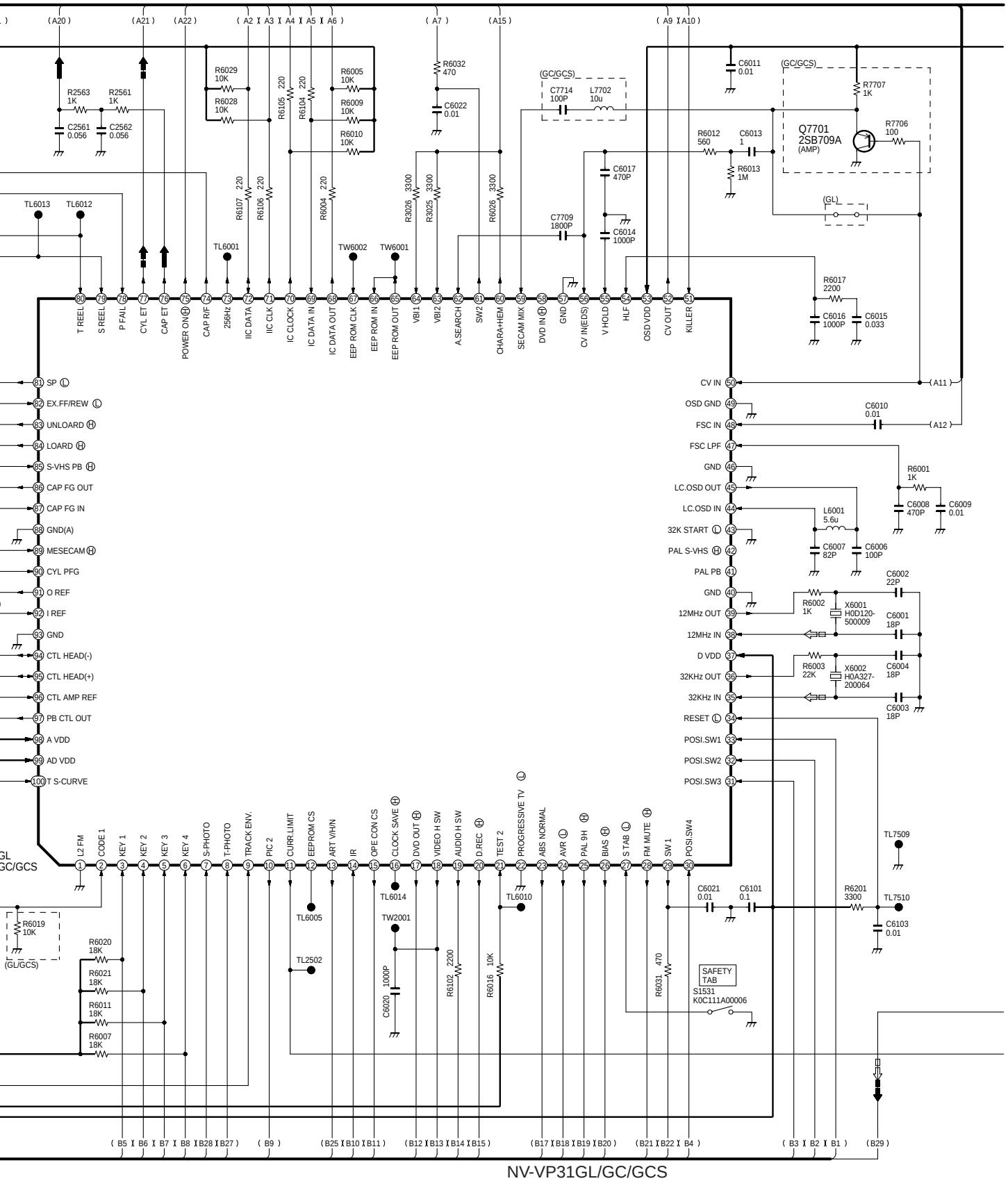
NV-VP31GL/GC/GCS
TIMER SECTION SCHEMATIC DIAGRAM

6 7 8 9

16.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

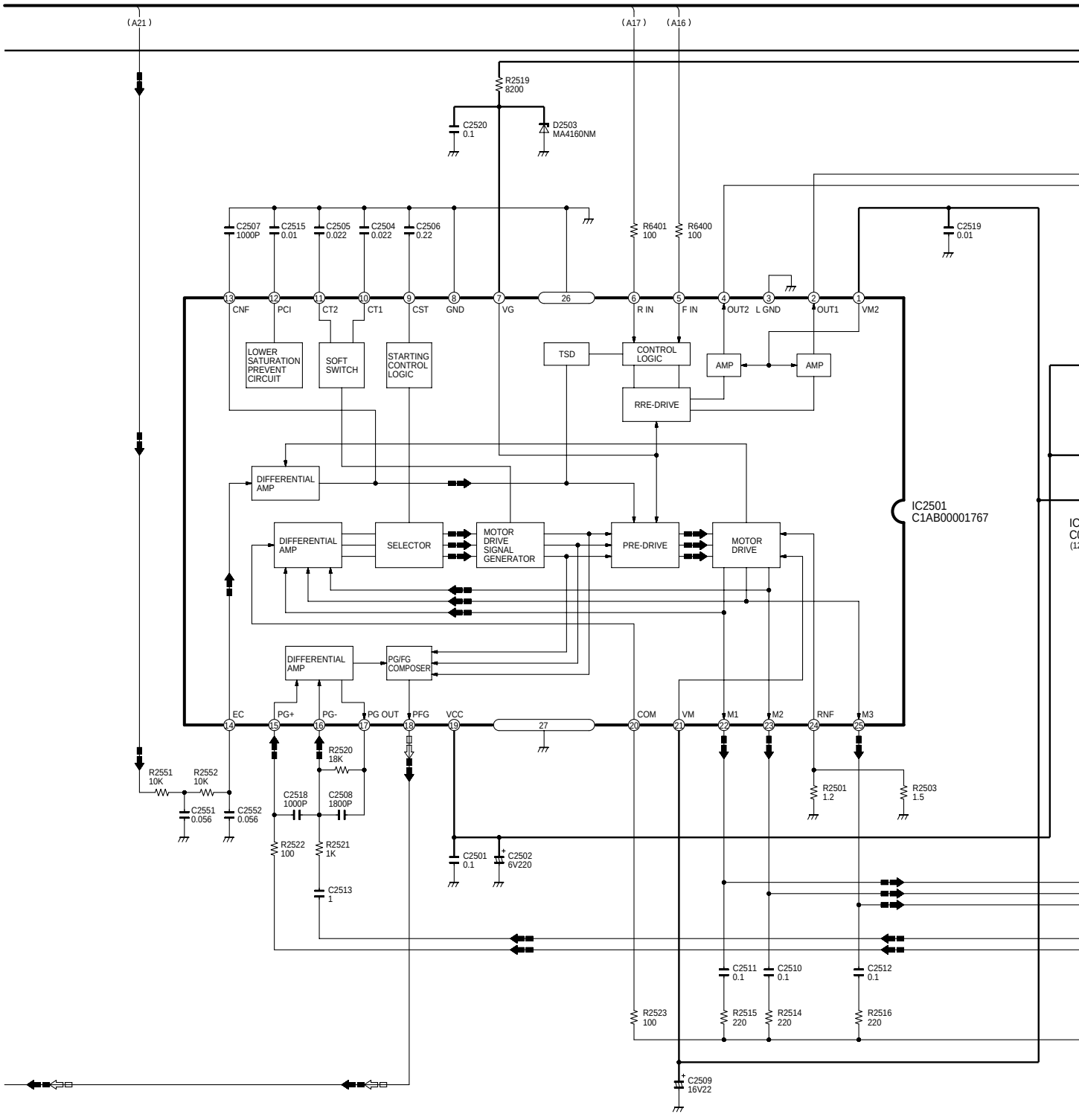


ASE LOOP CYLINDER SERVO SPEED LOOP CYLINDER SERVO PHASE LOOP



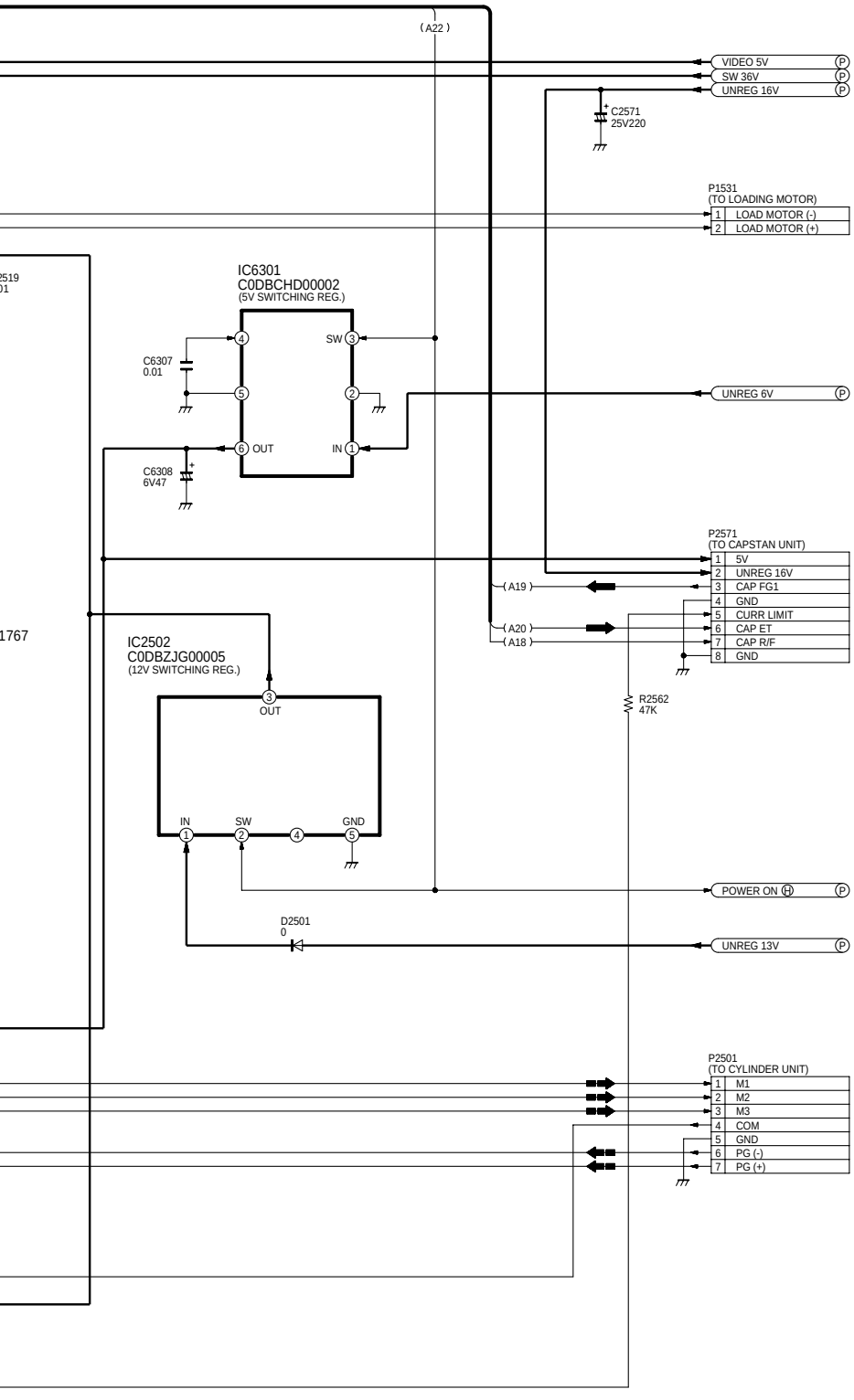
NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

6	7	8	9	10	11



NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

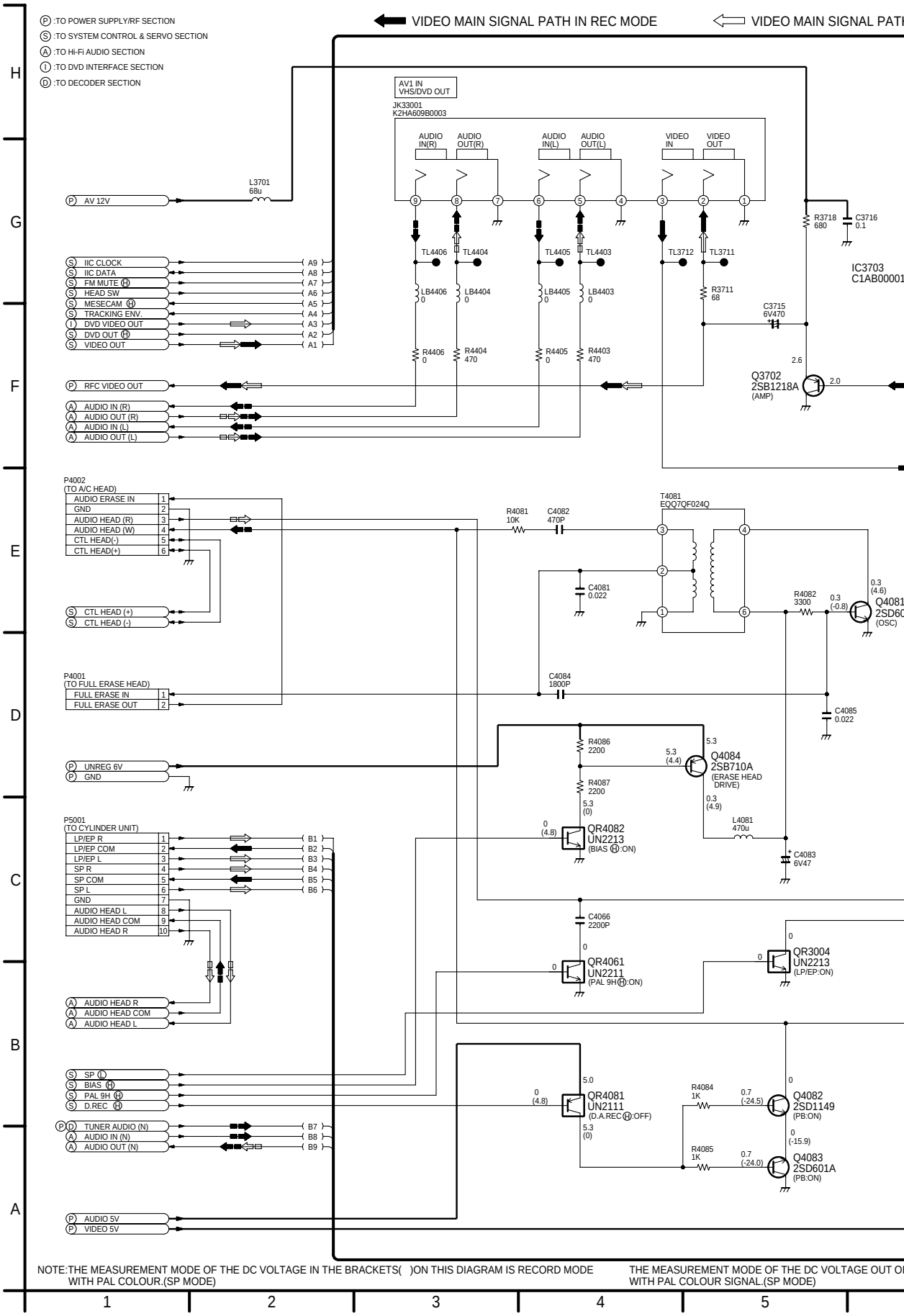
12	13	14	15	16	17



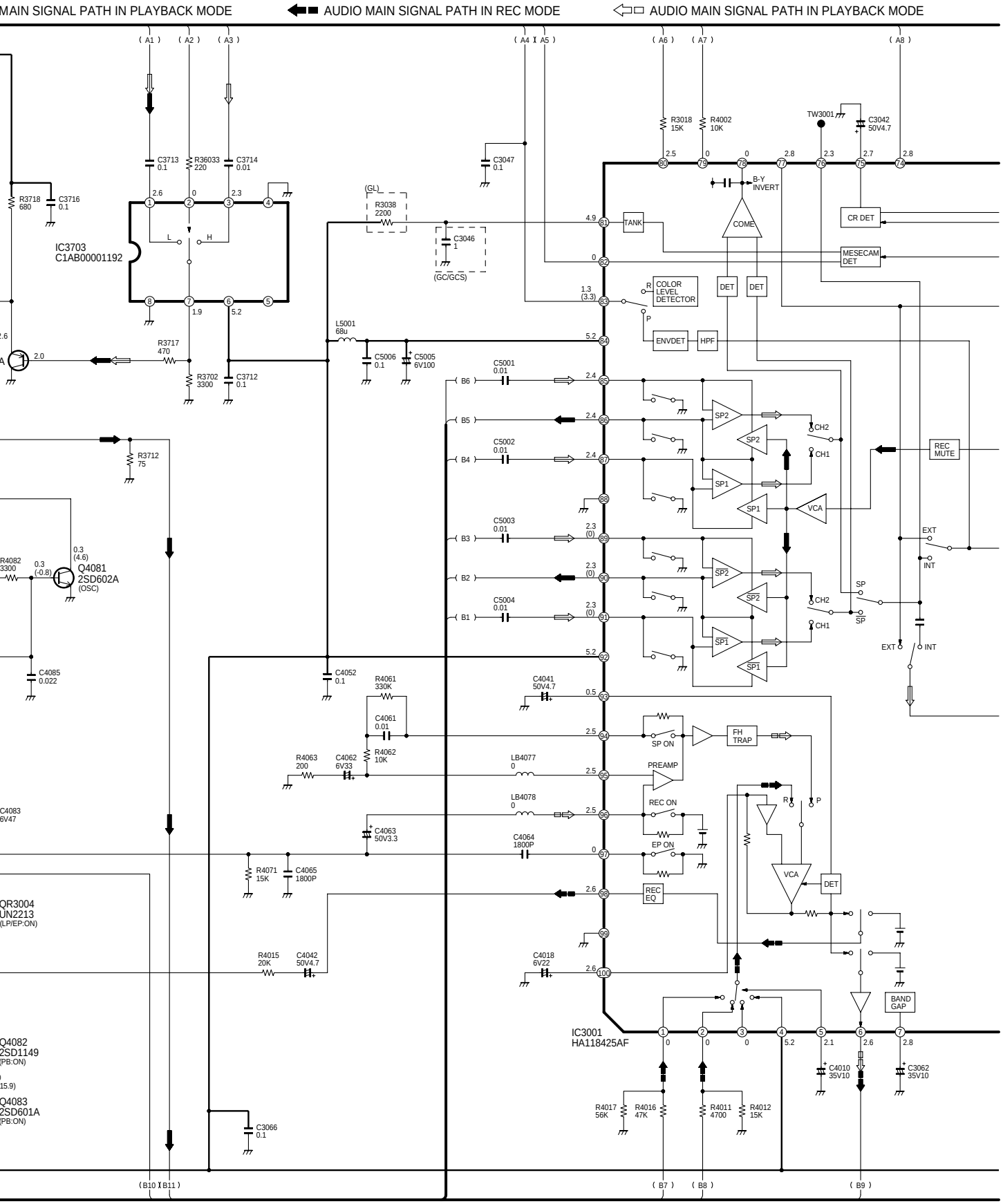
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

16.5. LUMINANCE & CHROMINANCE/AUDIO SECTION IN MAIN SCHEMATIC DIAGRA



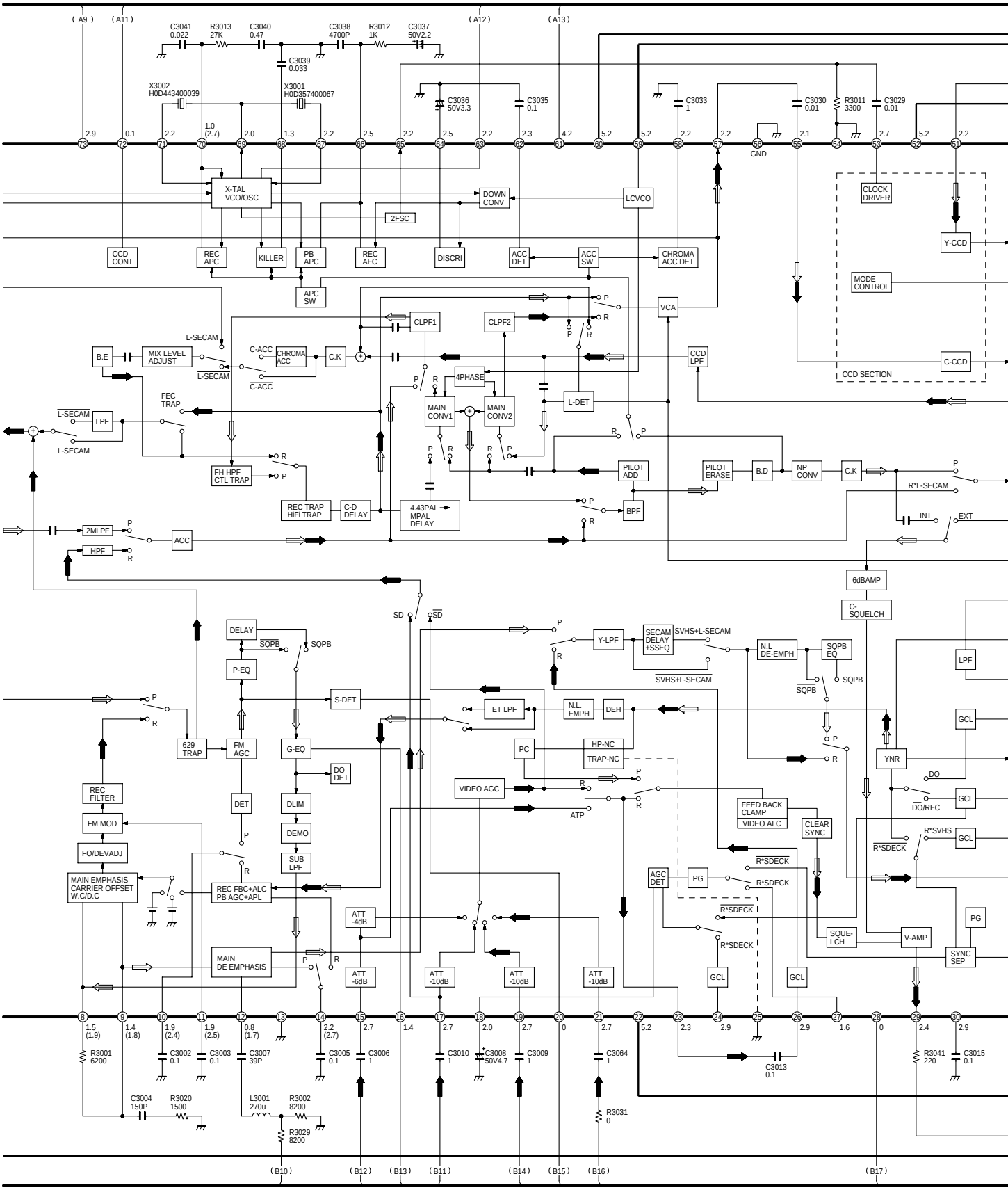
DIAGRAM



E DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE
ODE)

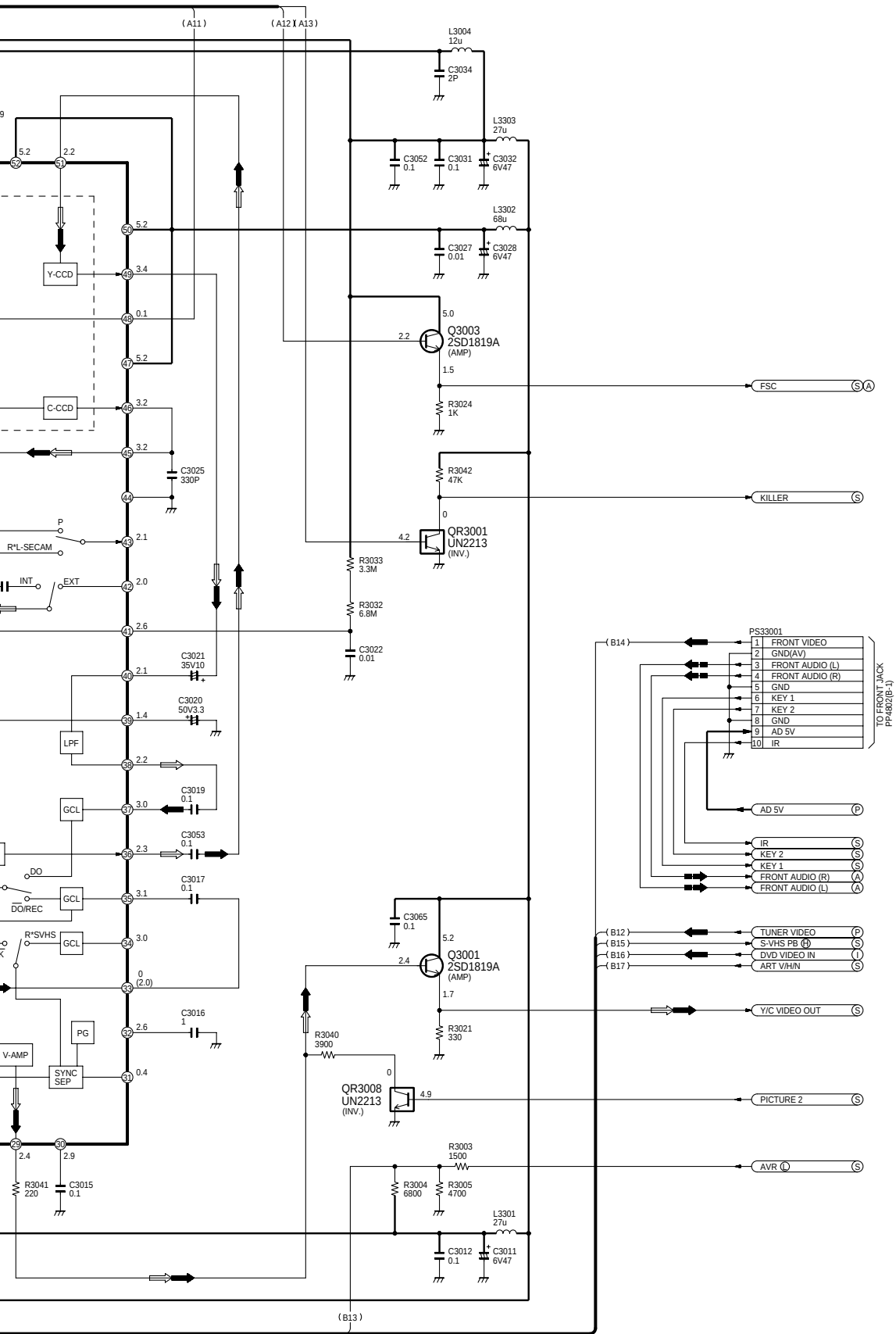
NV-VP31GL/GC/GCS
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

6 7 8 9 10 11



NV-VP31GL/GC/GCS
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

12 | 13 | 14 | 15 | 16 | 17 | 18

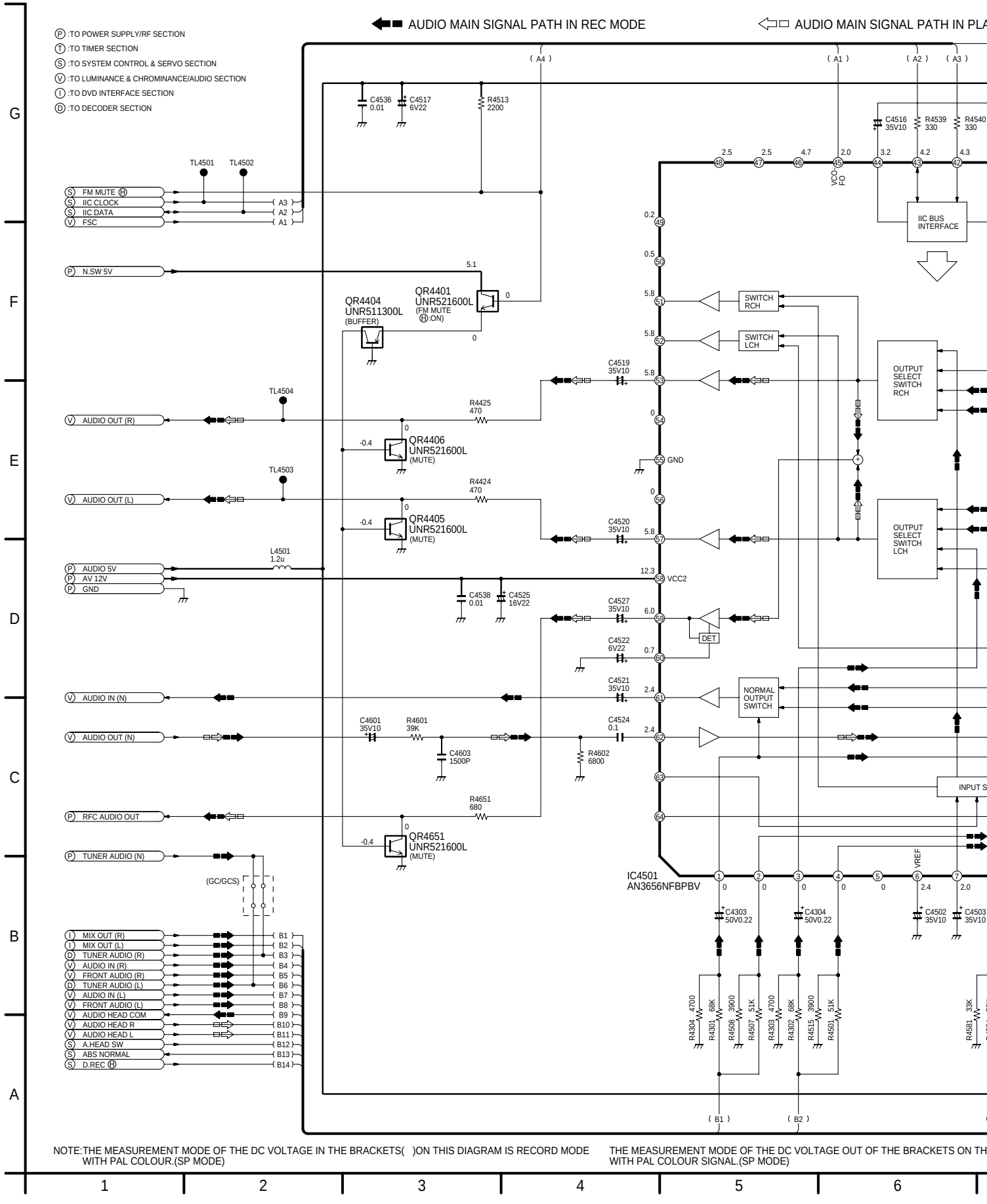


NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

18 | 19 | 20 | 21 | 22 | 23

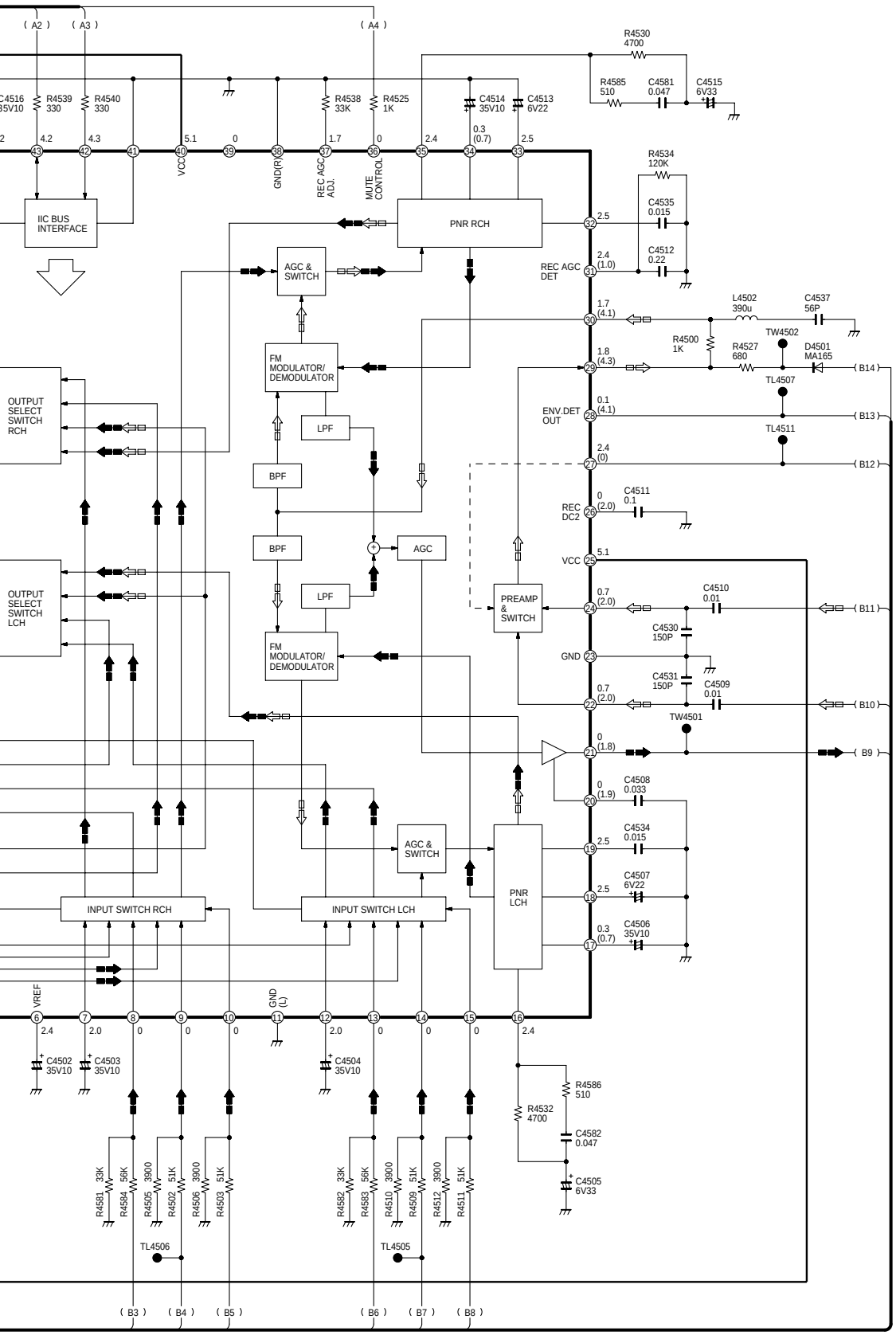
16.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON TH WITH PAL COLOUR SIGNAL.(SP MODE)

GNAL PATH IN PLAYBACK MODE



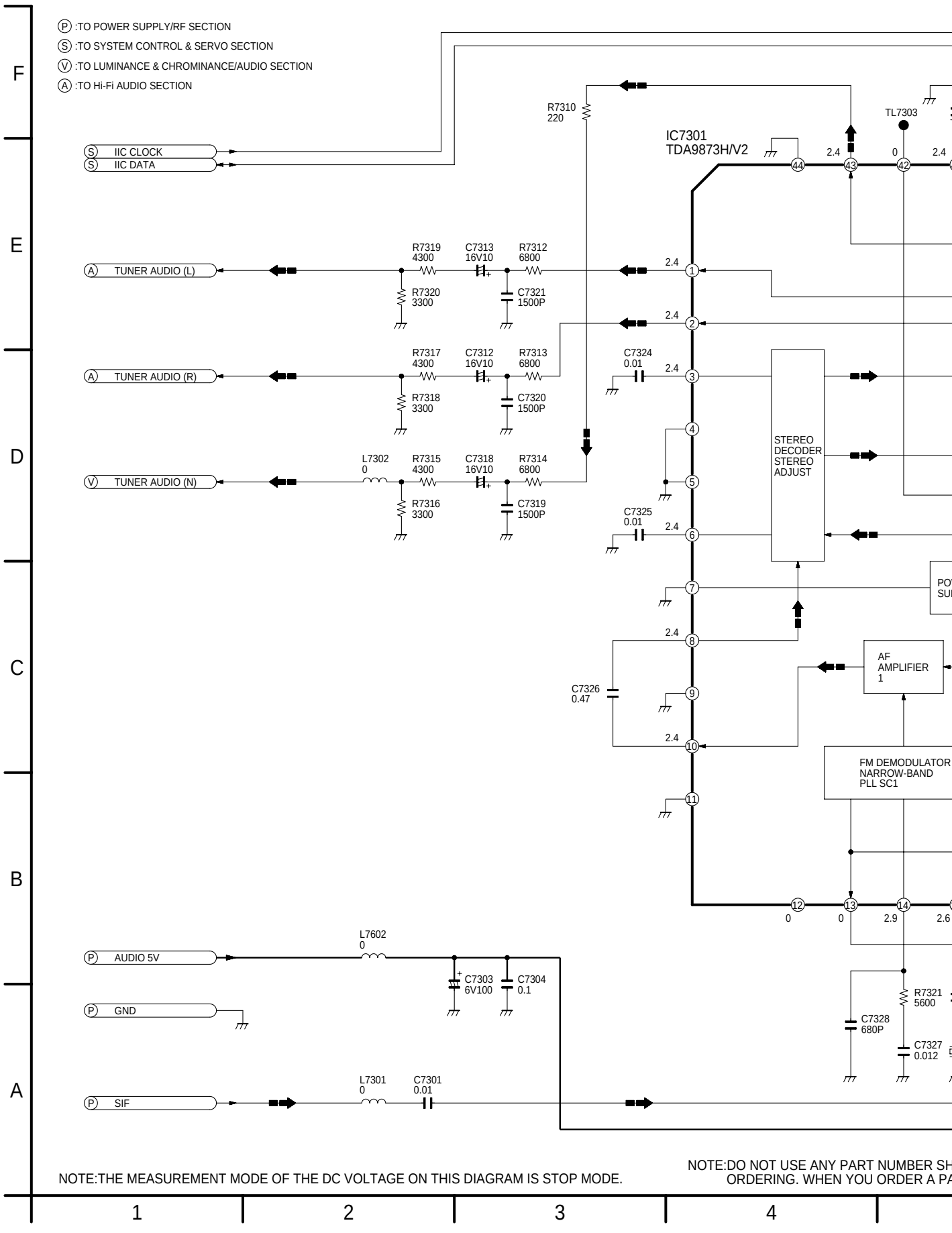
HE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
Hi-Fi AUDIO SECTION
SCHEMATIC DIAGRAM

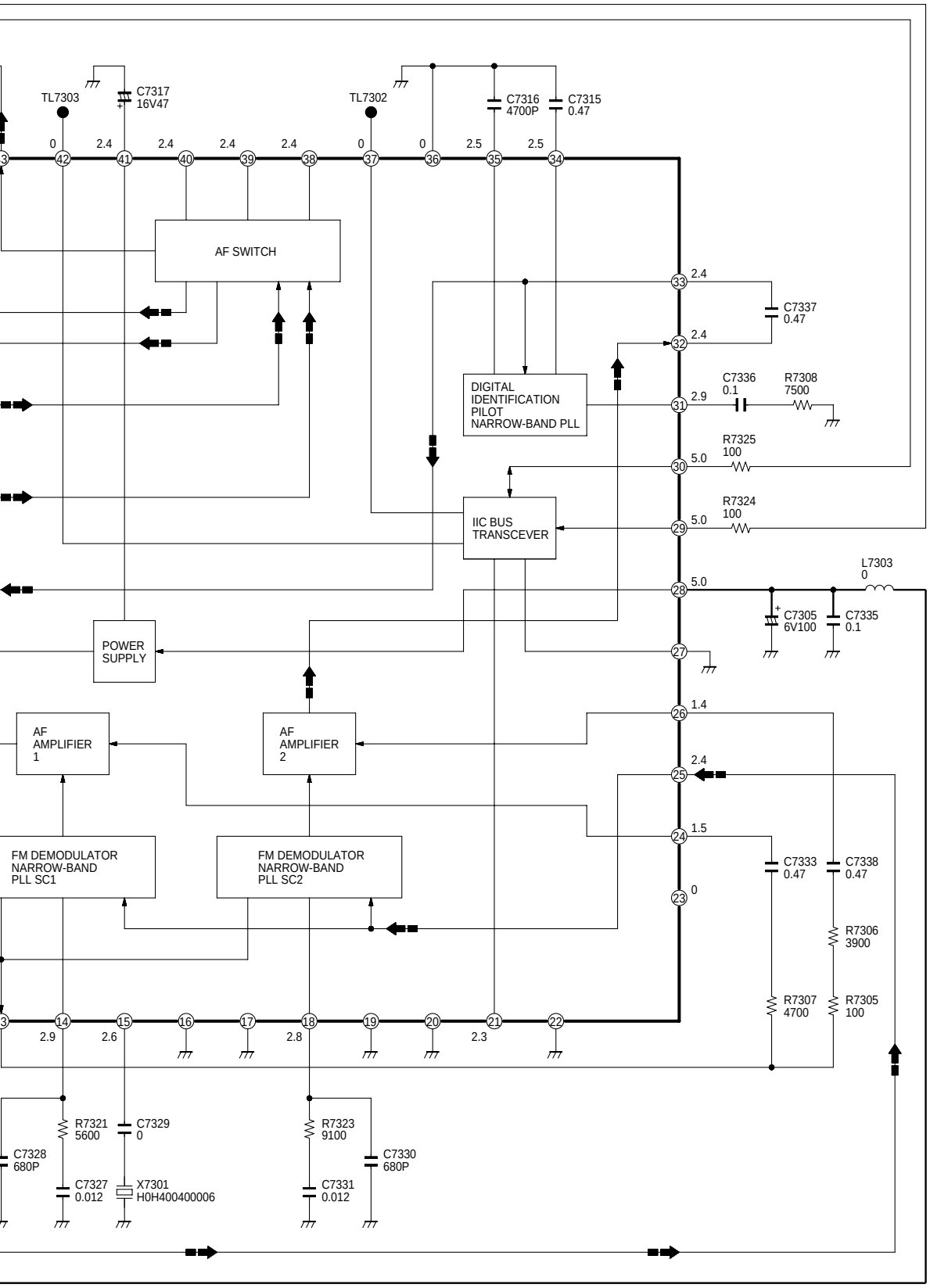
6	7	8	9	10	11

16.7. DECORDER SECTION IN MAIN SCHEMATIC DIAGRAM (NV-VP31GL)



-)

AUDIO SIGNAL PATH

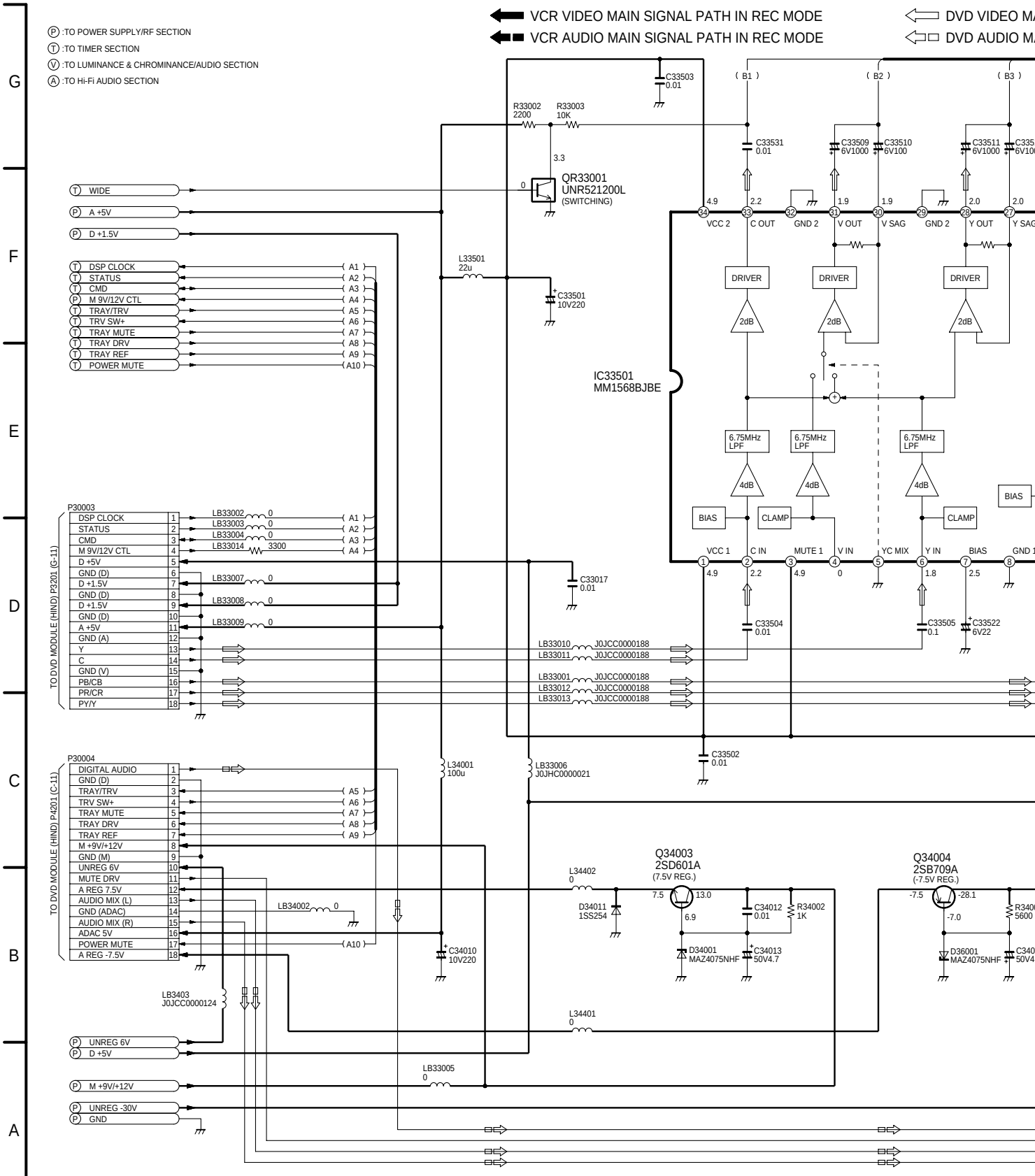


ART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL
DECODER SECTION SCHEMATIC DIAGRAM

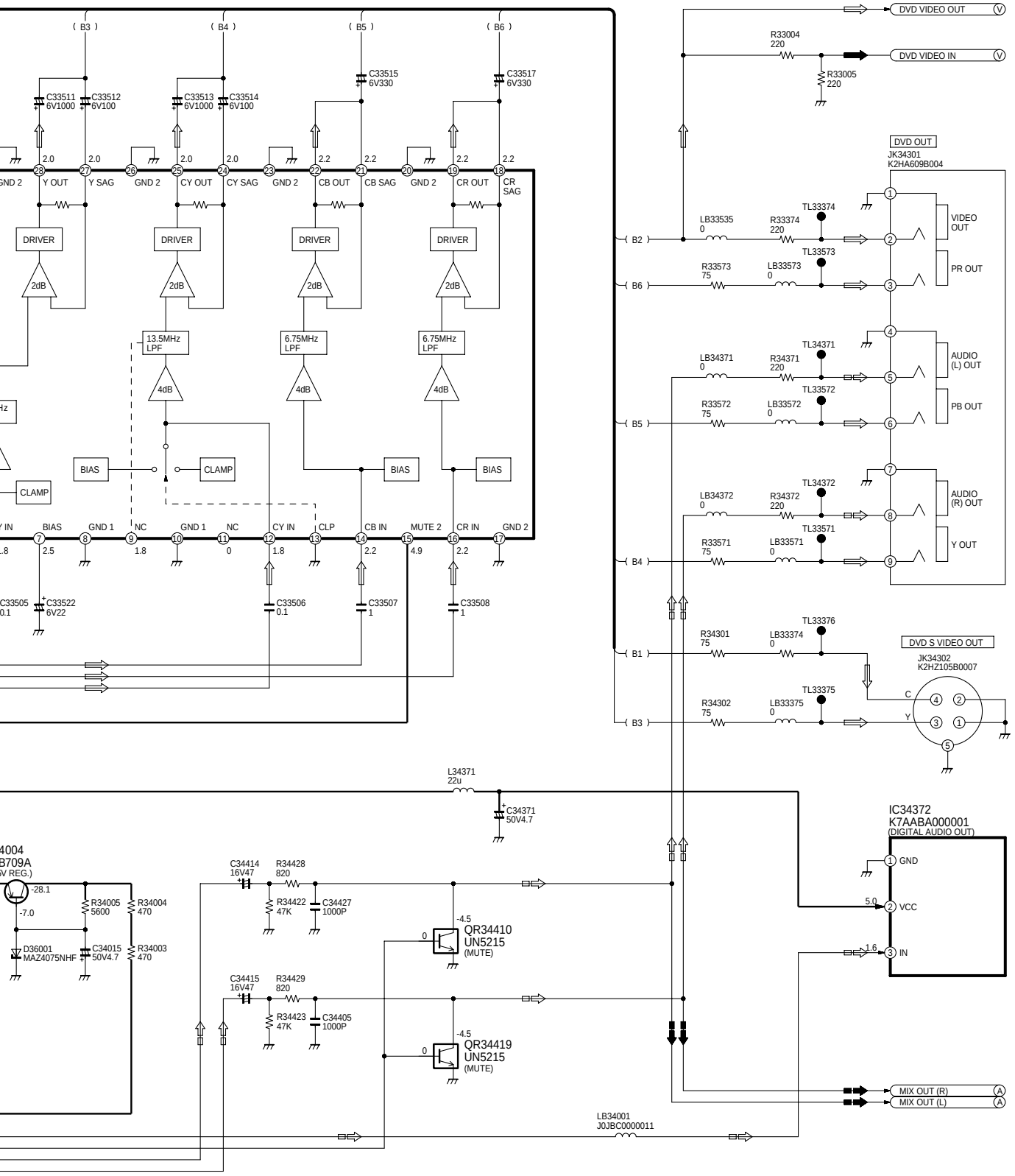
5 | 6 | 7 | 8

16.8. DVD INTERFACE SECTION IN MAIN SCHEMATIC DIAGRAM



DVD VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

DVD AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

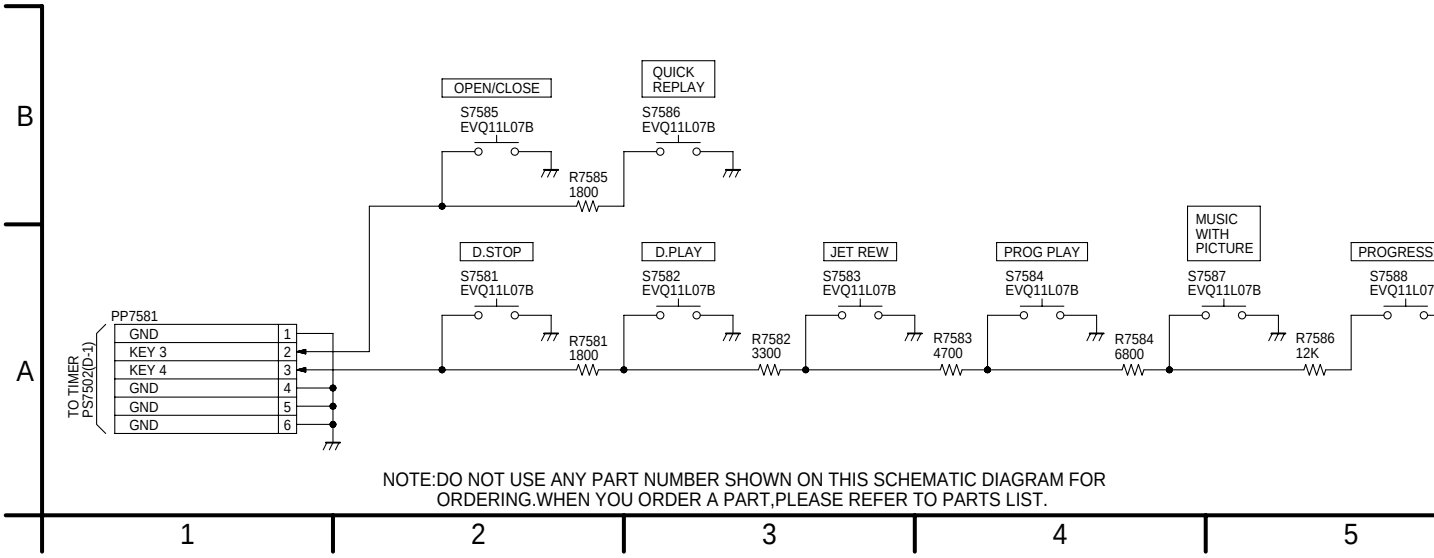


2 SHOWN ON THIS SCHEMATIC DIAGRAM FOR
A PART,PLEASE REFER TO PARTS LIST.

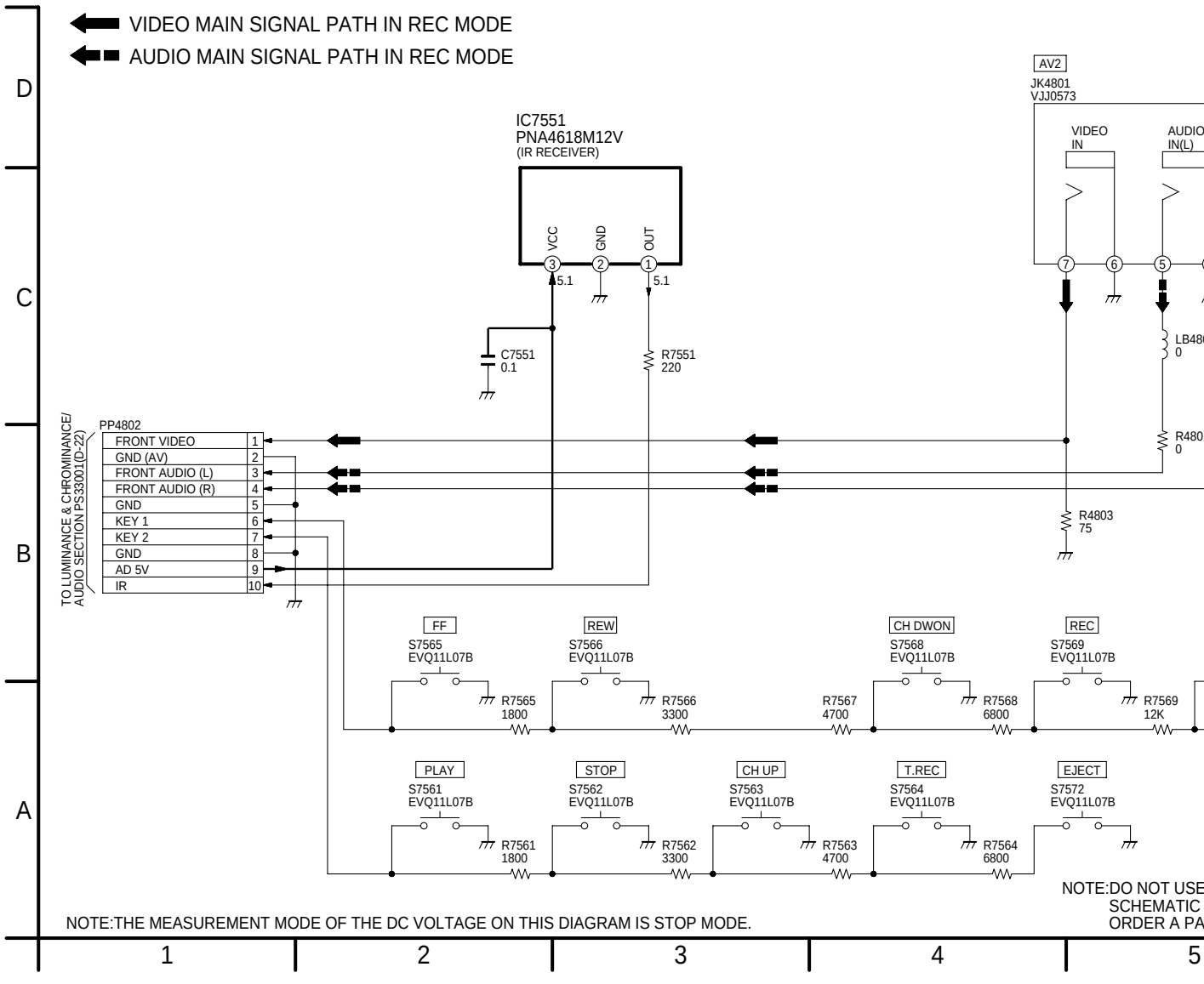
NV-VP31GL/GC/GCS
DVD INTERFACE SECTION SCHEMATIC DIAGRAM

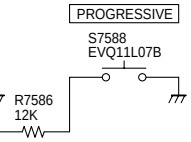
6 | 7 | 8 | 9 | 10 | 11

16.9. FRONT SW SCHEMATIC DIAGRAM



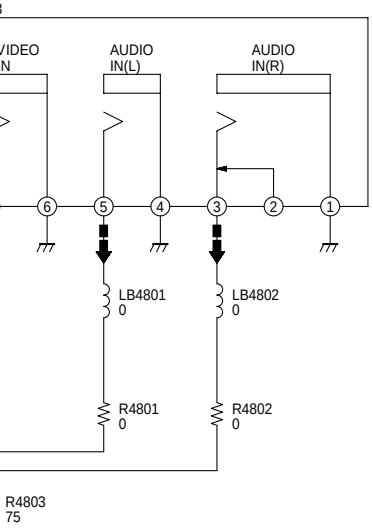
16.10. FRONT JACK SCHEMATIC DIAGRAM

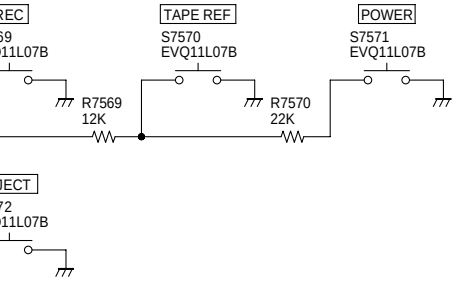




NV-VP31GL/GC/GCS
FRONT SW SCHEMATIC DIAGRAM

5



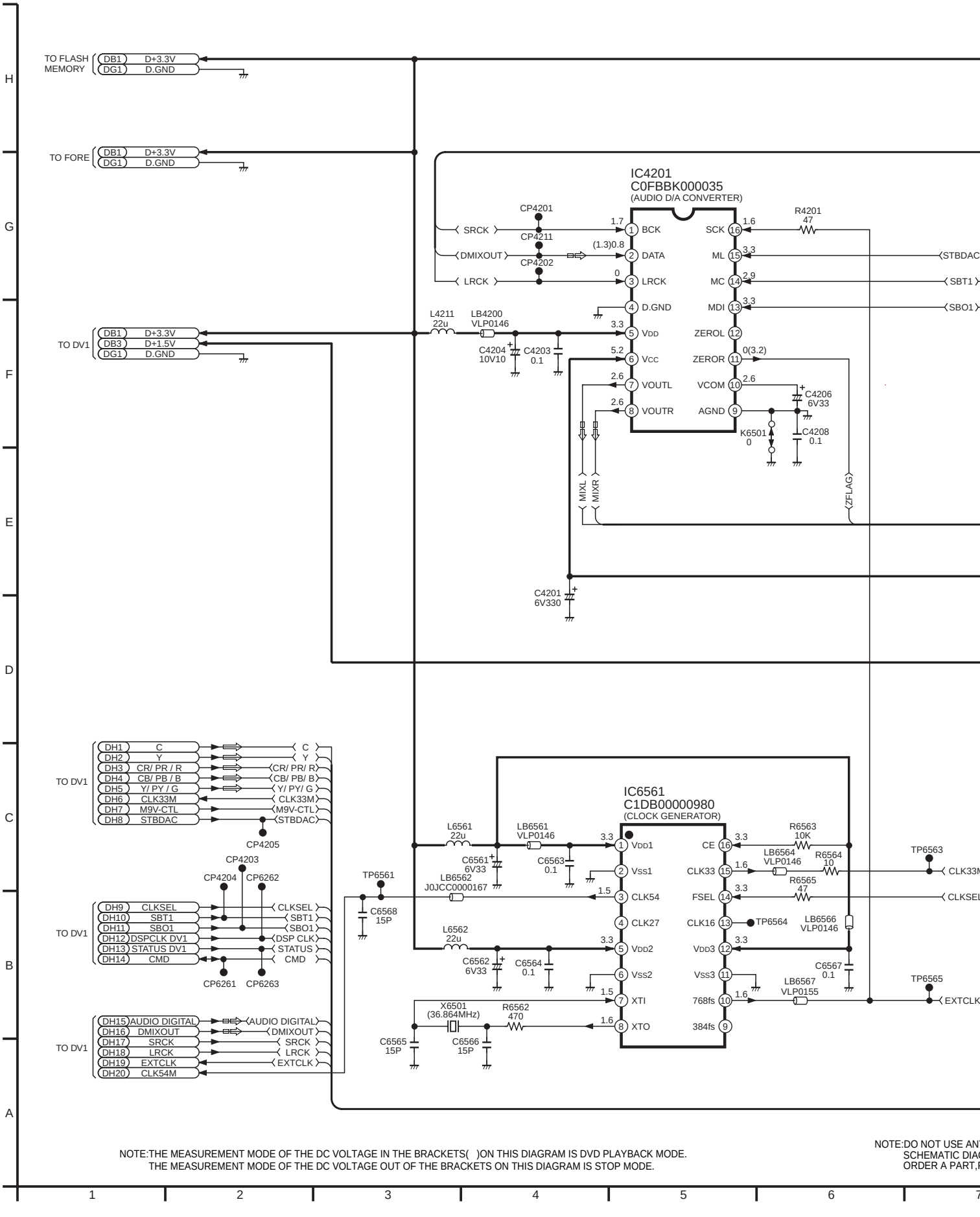


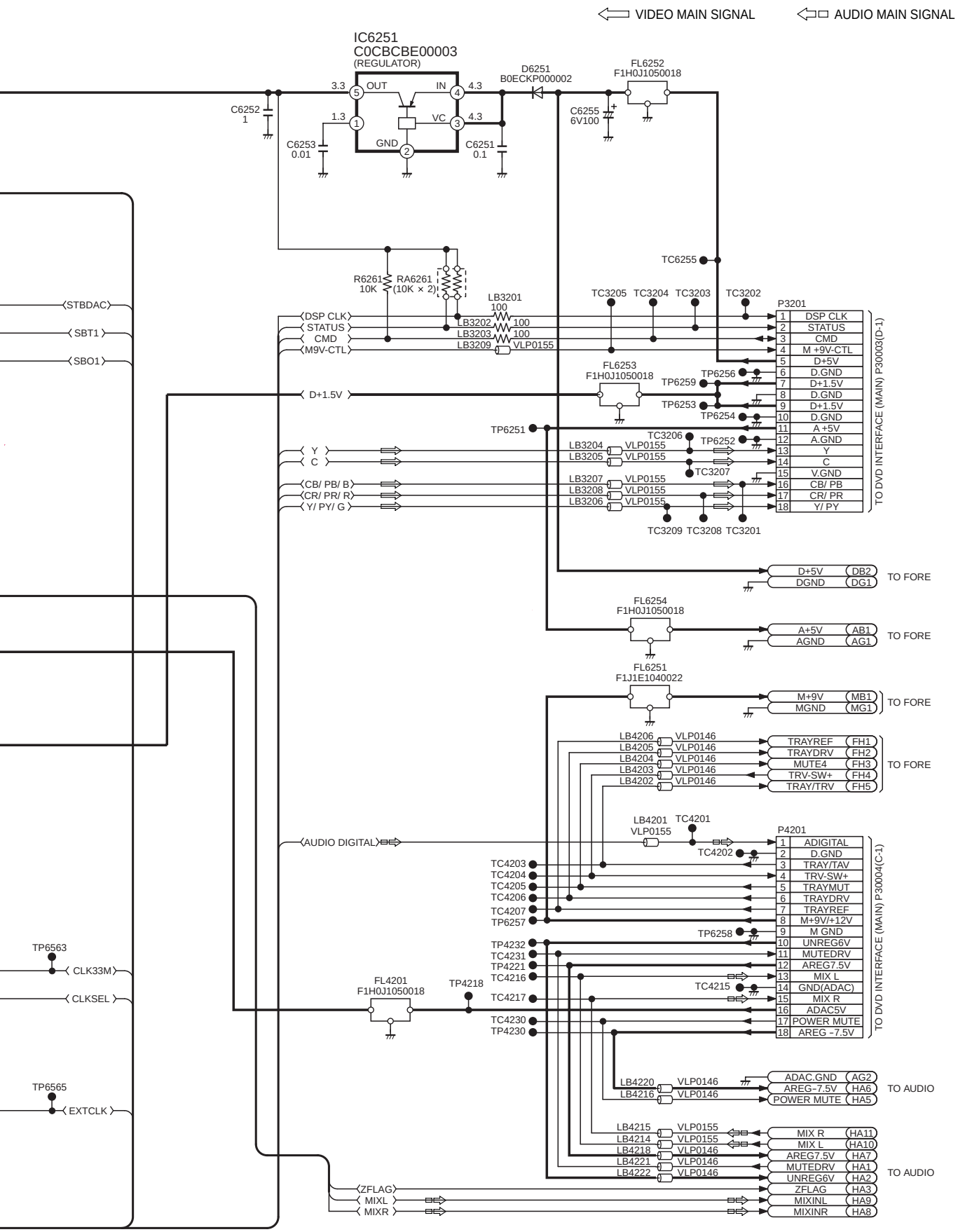
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE TO PARTS LIST.

NV-VP31GL/GC/GCS
FRONT JACK SCHEMATIC DIAGRAM

5 6

16.11. HIND SECTION IN DVD MODULE SCHEMATIC DIAGRAM



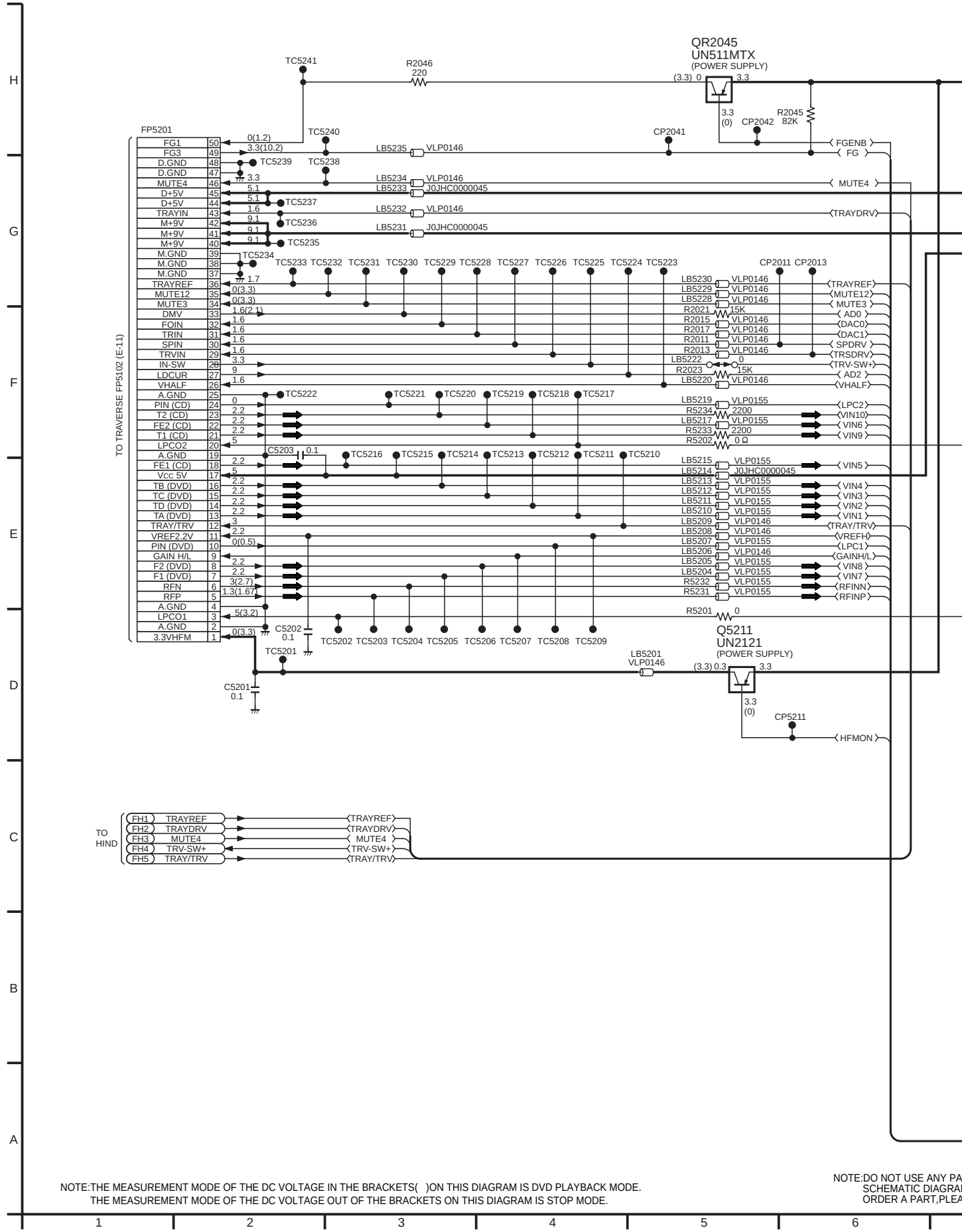


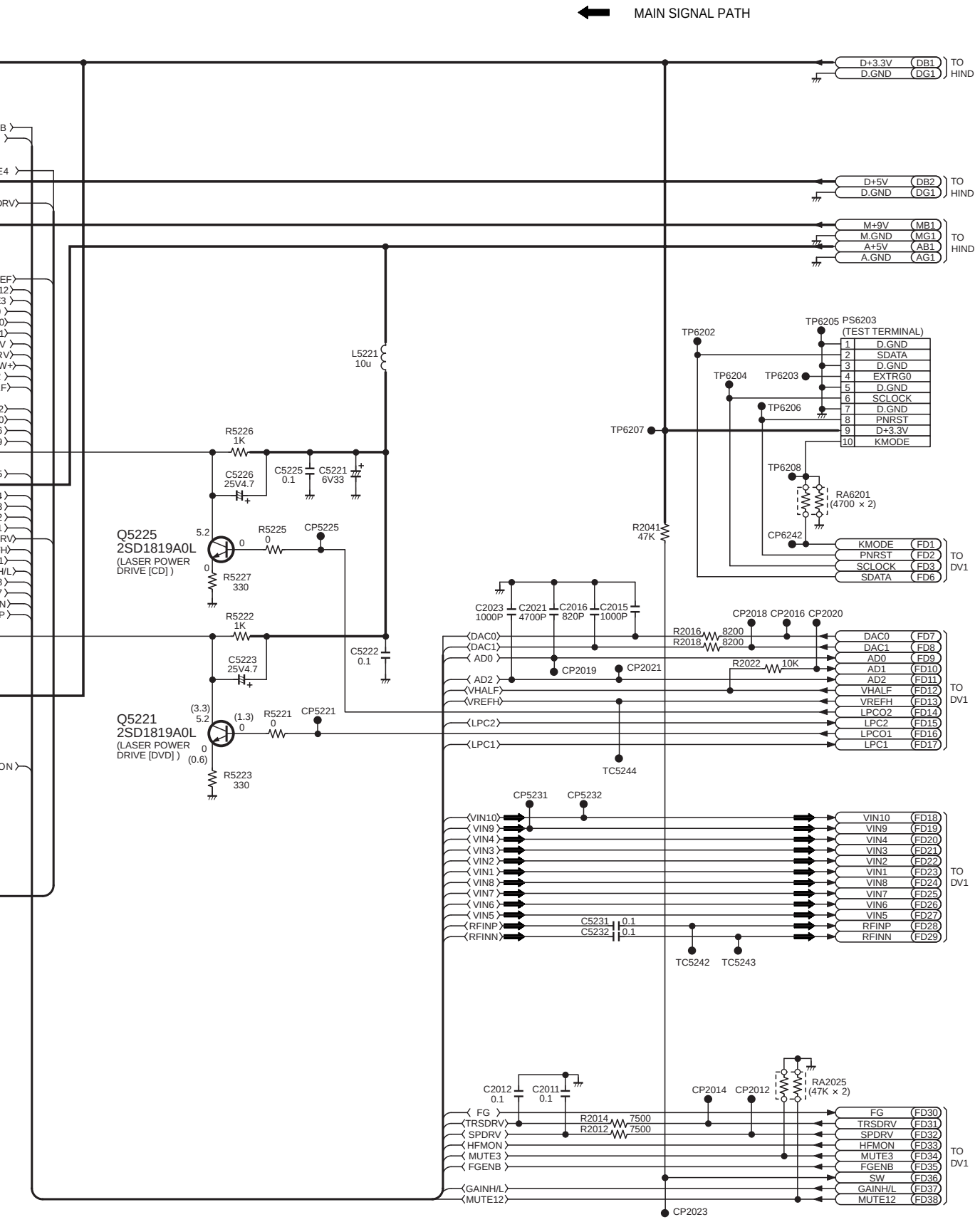
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
HIND SECTION SCHEMATIC DIAGRAM

7 8 9 10 11 12

16.12. FORE SECTION IN DVD MODULE SCHEMATIC DIAGRAM



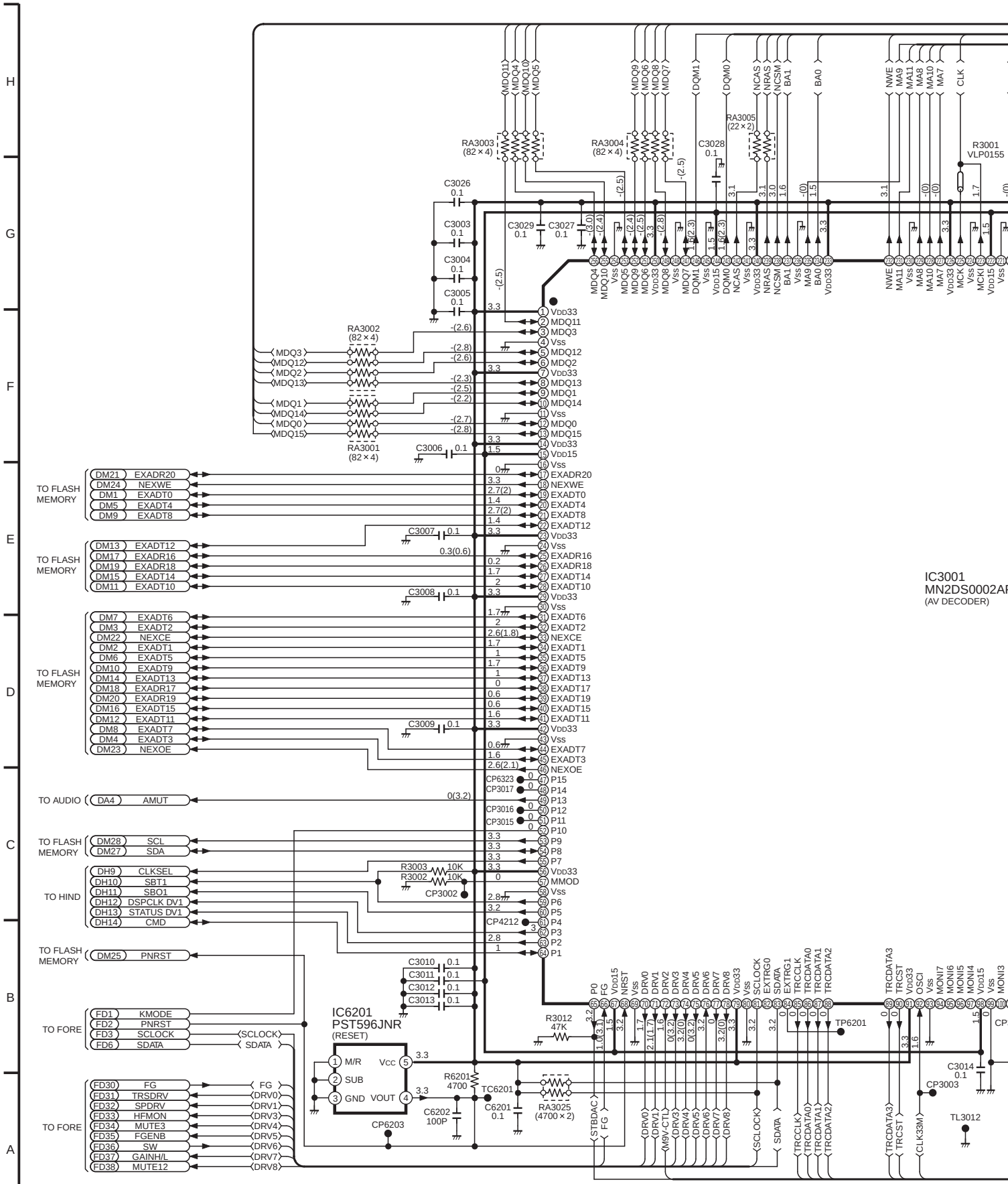


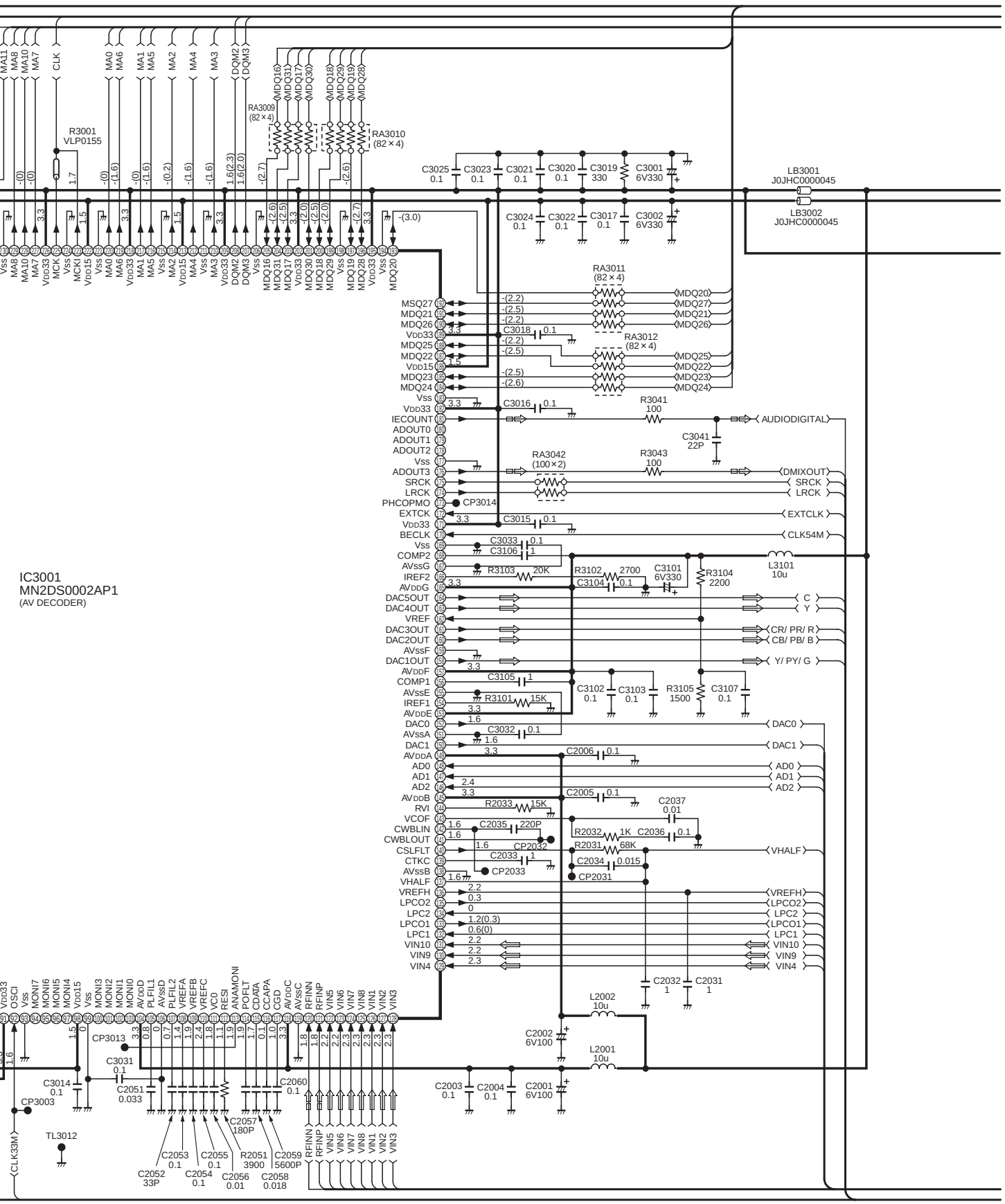
:DO NOT USE ANY PART NUMBER SHOWN ON THIS
SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU
ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
FORE SECTION SCHEMATIC DIAGRAM

7 | 8 | 9 | 10 | 11 | 12

16.13. DV1 SECTION IN DVD MODULE SCHEMATIC DIAGRAM

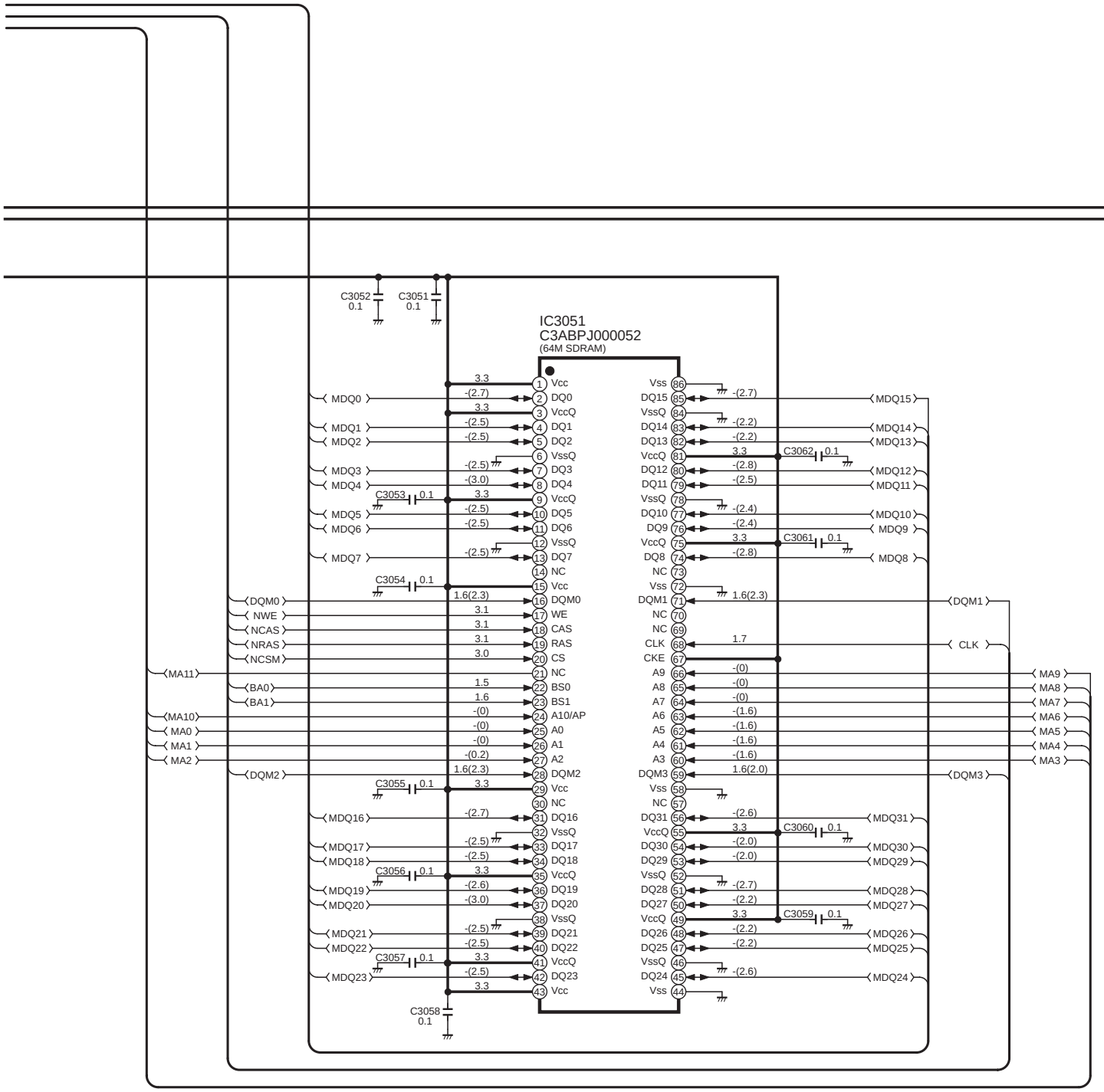


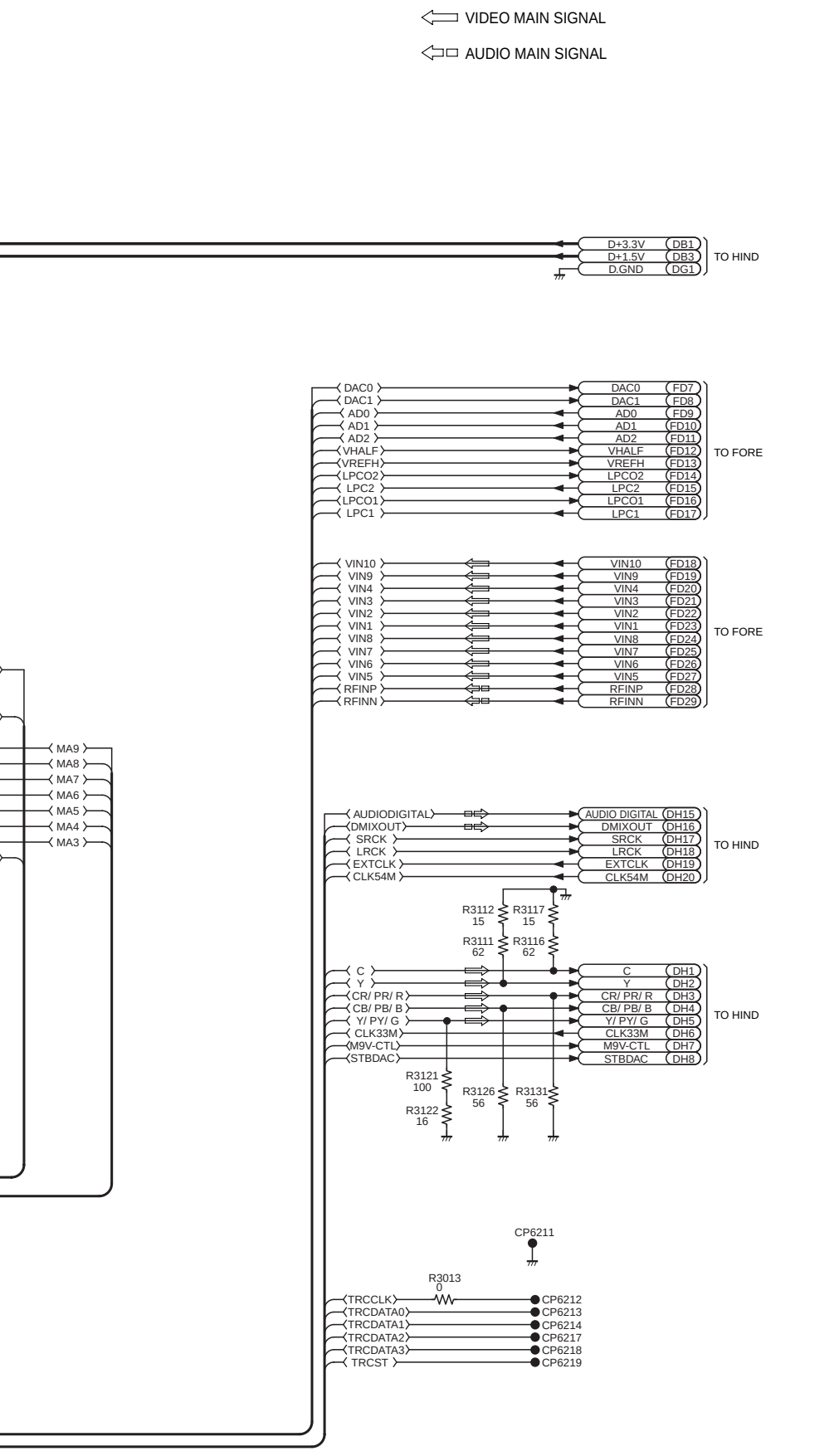


DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
DV1 SECTION SCHEMATIC DIAGRAM

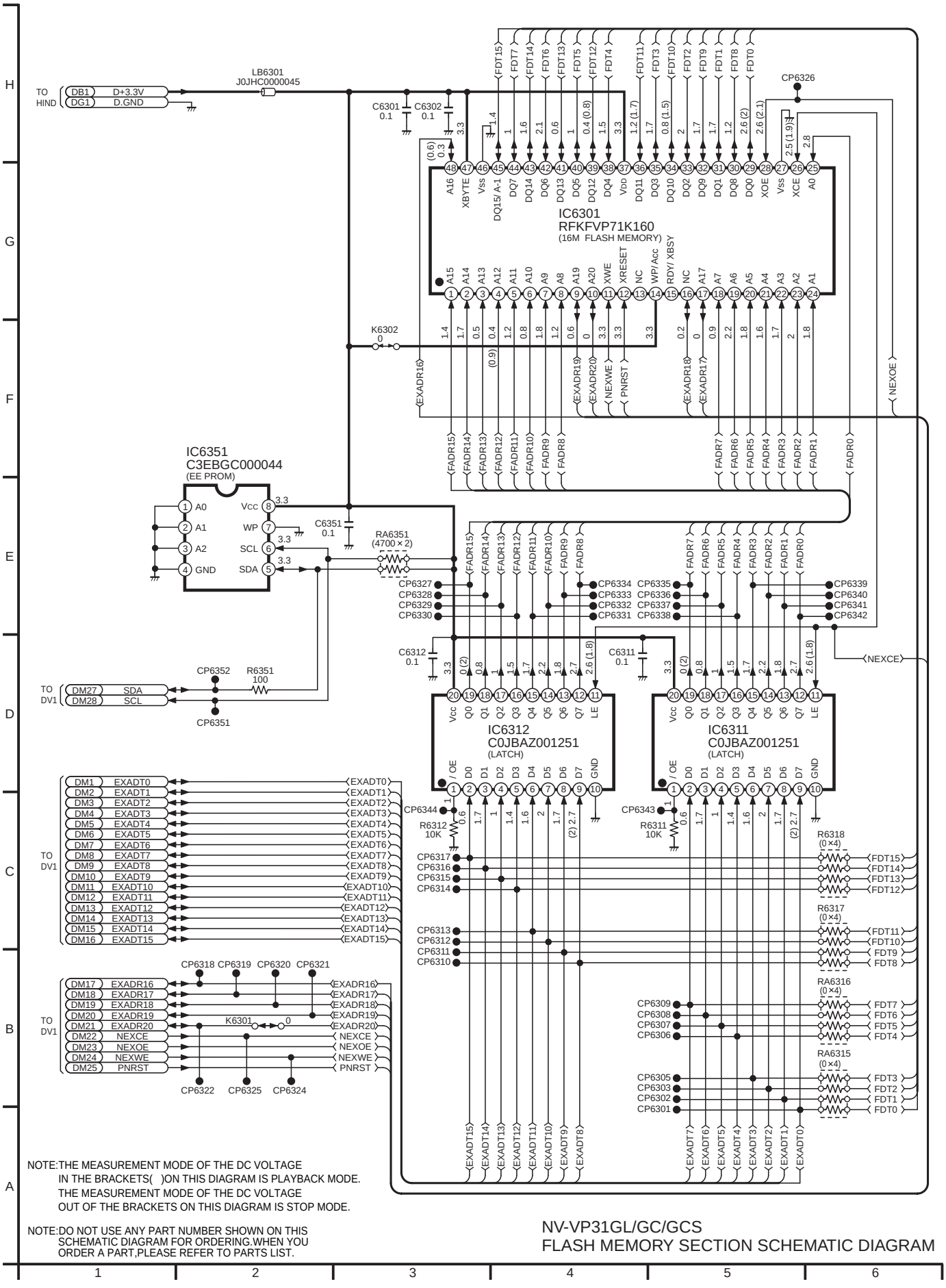
7 8 9 10 11 12


IC3051
C3ABPJ000052
(64M SDRAM)
C3052 0.1
C3051 0.1
C3053 0.1
C3054 0.1
C3055 0.1
C3056 0.1
C3057 0.1
C3058 0.1
C3059 0.1
C3060 0.1
C3061 0.1
C3062 0.1
1 Vcc
2 DQ0
3 VccQ
4 DQ1
5 DQ2
6 VssQ
7 DQ3
8 DQ4
9 VccQ
10 DQ5
11 DQ6
12 VssQ
13 DQ7
14 NC
15 Vcc
16 DQM0
17 WE
18 CAS
19 RAS
20 CS
21 NC
22 BS0
23 BS1
24 A10/AP
25 A0
26 A1
27 A2
28 DQM2
29 Vcc
30 NC
31 DQ16
32 VssQ
33 DQ17
34 DQ18
35 VccQ
36 DQ19
37 DQ20
38 VssQ
39 DQ21
40 DQ22
41 VccQ
42 DQ23
43 Vcc
86 Vss
85 DQ15
84 VssQ
83 DQ14
82 DQ13
81 VccQ
80 DQ12
79 DQ11
78 VssQ
77 DQ10
76 DQ9
75 VccQ
74 DQ8
73 NC
72 Vss
71 DQM1
70 NC
69 NC
68 CLK
67 CKE
66 A9
65 A8
64 A7
63 A6
62 A5
61 A4
60 A3
59 DQM3
58 Vss
57 NC
56 DQ31
55 VccQ
54 DQ30
53 DQ29
52 VssQ
51 DQ28
50 DQ27
49 VccQ
48 DQ26
47 DQ25
46 VssQ
45 DQ24
44 Vss
MDQ0
MDQ1
MDQ2
MDQ3
MDQ4
MDQ5
MDQ6
MDQ7
MDQ16
MDQ17
MDQ18
MDQ19
MDQ20
MDQ21
MDQ22
MDQ23
MDQ15
MDQ14
MDQ13
MDQ12
MDQ11
MDQ10
MDQ9
MDQ8
MDQ31
MDQ30
MDQ29
MDQ28
MDQ27
MDQ26
MDQ25
MDQ24
DQM0
NWE
NCAS
NRAS
NCSM
BA0
BA1
MA11
MA10
MA0
MA1
MA2
DQM2
DQM1
DQM3
CLK
MA9
MA8
MA7
MA6
MA5
MA4
MA3



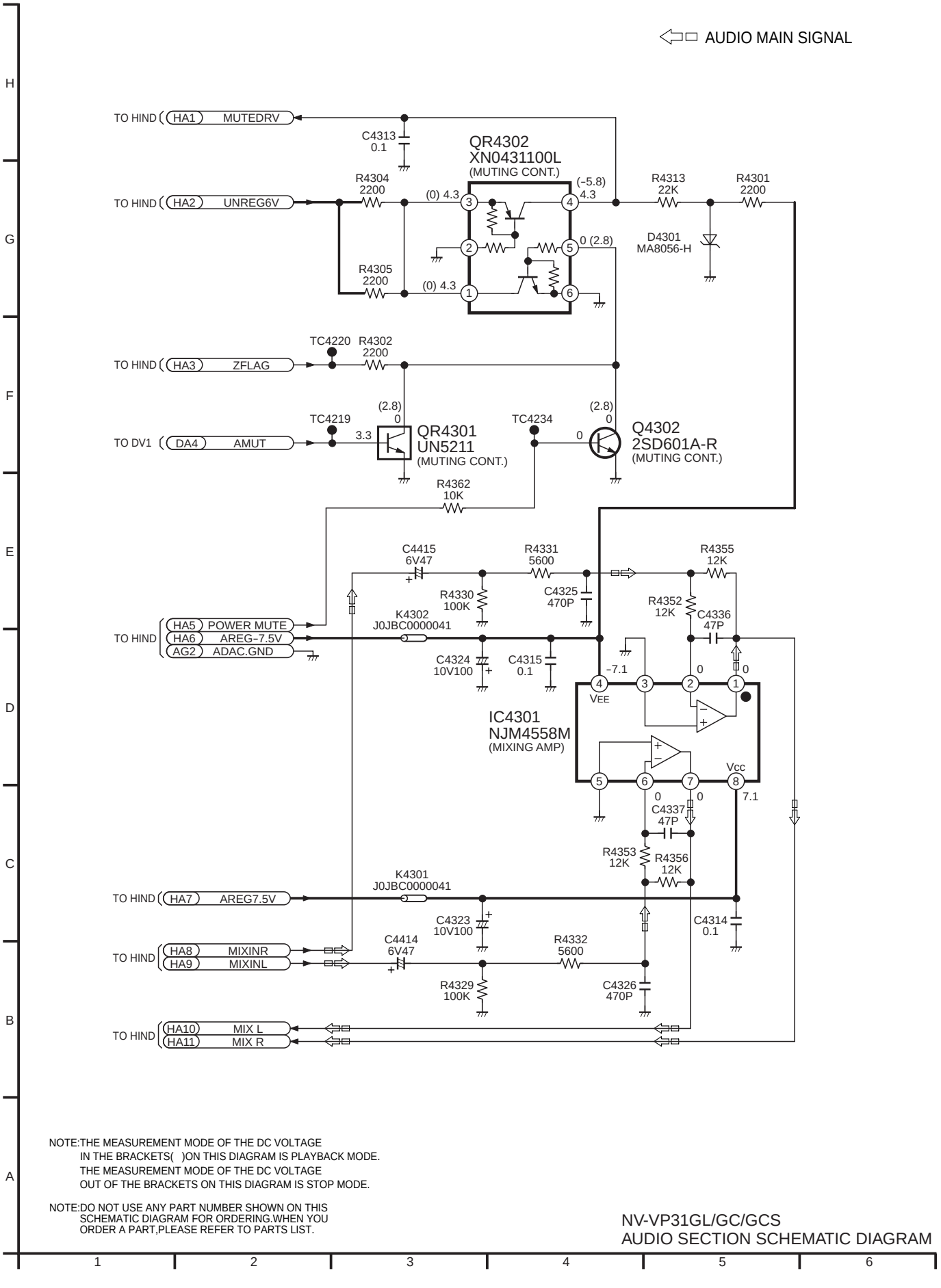
NV-VP31GL/GC/GCS
DV1 SECTION SCHEMATIC DIAGRAM

19 20 21 22



NV-VP31GL/GC/GCS
FLASH MEMORY SECTION SCHEMATIC DIAGRAM

16.15. AUDIO SECTION IN DVD MODULE SCHEMATIC DIAGRAM

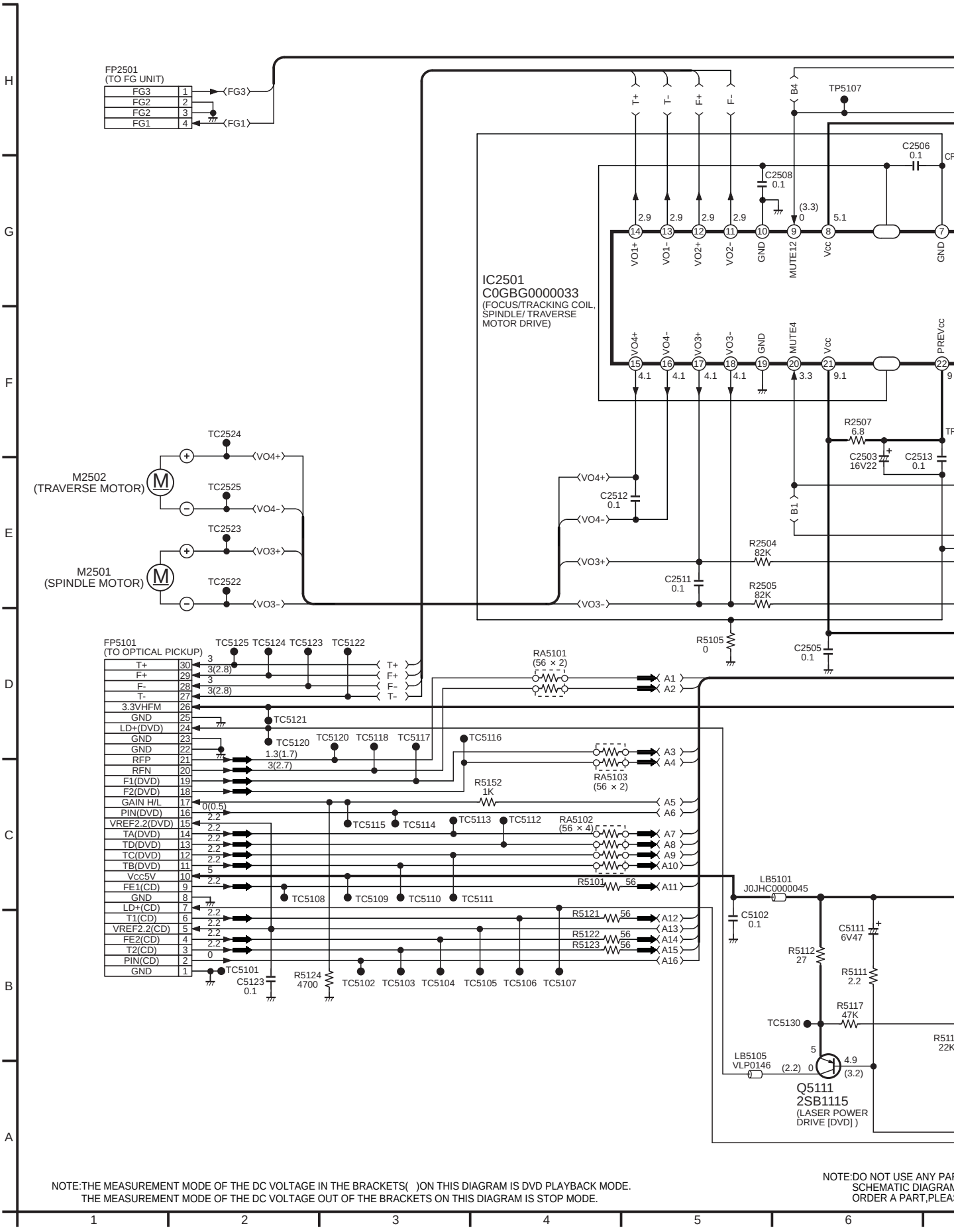


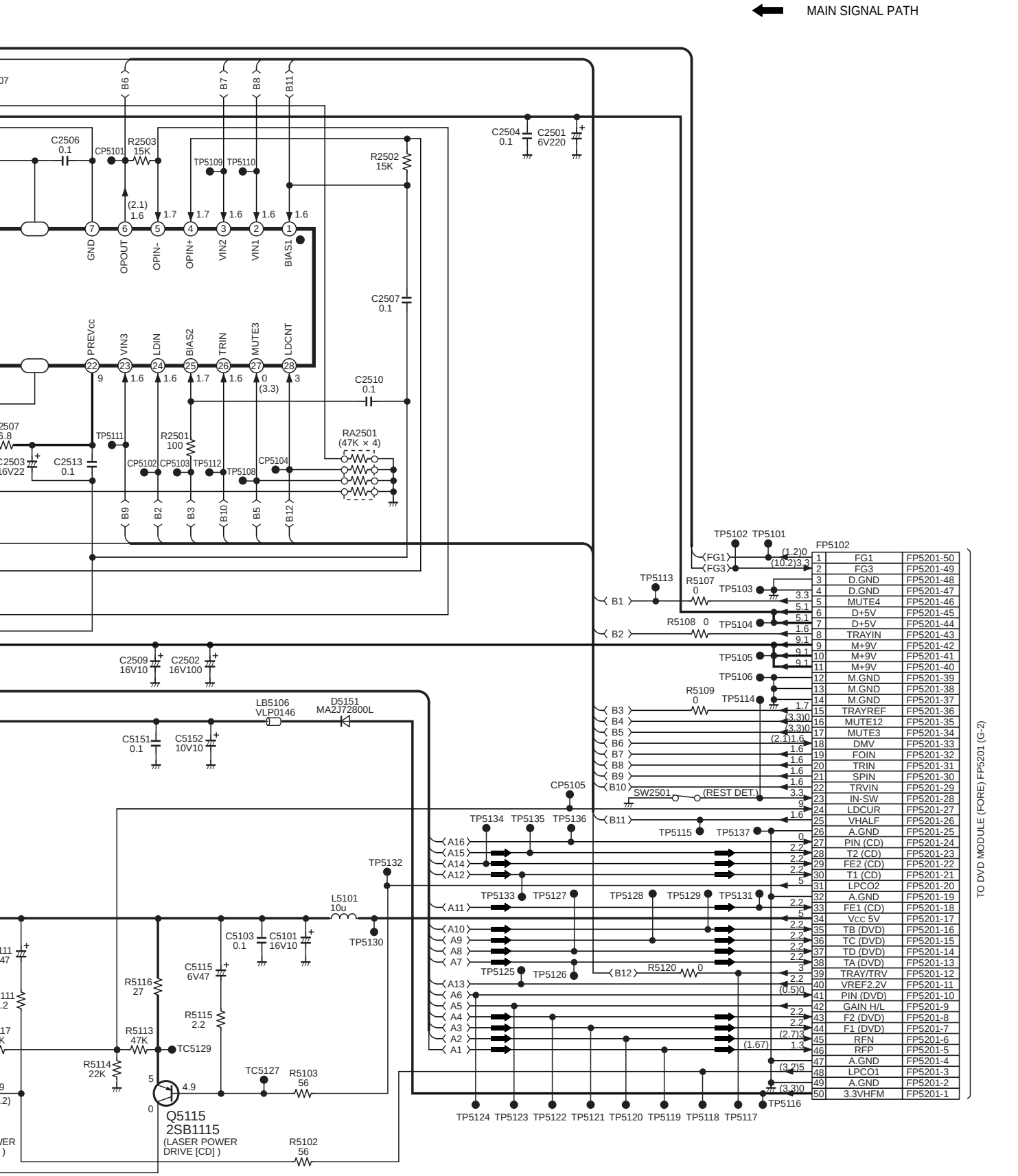
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE
IN THE BRACKETS( )ON THIS DIAGRAM IS PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE
OUT OF THE BRACKETS ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS
SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU
ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
AUDIO SECTION SCHEMATIC DIAGRAM

16.16. TRAVERSE SCHEMATIC DIAGRAM





DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-VP31GL/GC/GCS
TRAVERSE SCHEMATIC DIAGRAM

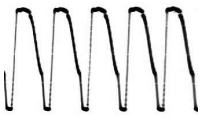
7 8 9 10 11 12

T1150-3 STOP
3.8Vp-p (2msec.div.)

T1150-5 STOP
560Vp-p (5usec.div.)

T1150-7 STOP
33Vp-p (5usec.div.)

T1150-13 STOP
76Vp-p (5usec.div.)

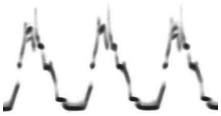


T1150-17 STOP
18Vp-p (5usec.div.)

T1150-19 STOP
40Vp-p (5usec.div.)

T1150-20 STOP
100Vp-p (5usec.div.)

Q1200-1 STOP
0.4Vp-p (5usec.div.)



IC2501-22,23,25 PLAY
7.0Vp-p (2msec.div.)

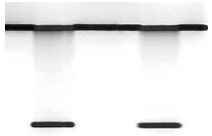
IC6001-13 STILL
5.0Vp-p (5msec.div.)

IC6001-18 REC
5.0Vp-p (10msec.div.)

IC6001-50 REC/PLAY
2.0Vp-p (20usec.div.)

IC6001-52 REC/PLAY
2.0Vp-p (20usec.div.)

IC6001-68,69 REC
5.0Vp-p (5msec.div.)

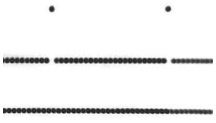


IC6001-70 REC
5.0Vp-p (5msec.div.)

IC6001-71 REC
5.0Vp-p (5usec.div.)

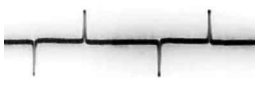
IC6001-72 REC
5.0Vp-p (5msec.div.)

IC6001-79,80 FF/REW
5.0Vp-p (1msec.div.)



IC6001-90 REC
5.0Vp-p (10msec.div.)

IC6001-94,95 REC
6.8Vp-p (10msec.div.)



IC6001-97 PLAY
0.8Vp-p (10msec.div.)

IC3001-6 REC/PLAY
1.2Vp-p (0.5msec.div.)

IC3001-17,21 REC
1.2Vp-p (20µsec.div.)

IC3001-26 REC
0.5Vp-p (20µsec.div.)

IC3001-29 REC/PLAY
2.2Vp-p (20µsec.div.)

IC3001-45,46 PLAY
0.5Vp-p (20µsec.div.)

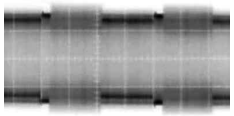
IC3001-49 PLAY
0.5Vp-p (20µsec.div.)

IC3001-73 REC/PLAY
5.0Vp-p (5msec.div.)

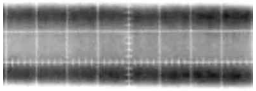
IC3001-74 REC/PLAY
5.0Vp-p (5msec.div.)

IC3001-80 REC/PLAY
0.5Vp-p (10msec.div.)

IC3001-85 PLAY
1.8Vp-p (20µsec.div.)

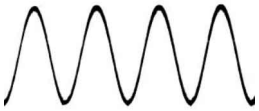


IC3001-86 REC
1.8Vp-p (5msec.div.)

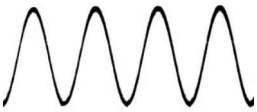


IC3001-87 PLAY
150mVp-p (20µsec.div.)

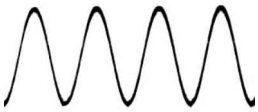
IC3001-96 PLAY
5.0Vp-p (5msec.div.)



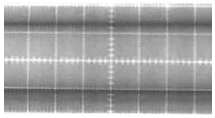
IC3001-98 REC
1.6Vp-p (0.5msec.div.)



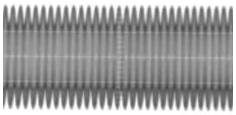
IC4501-2,4 REC
0.4Vp-p (0.5msec.div.)



IC4501-9,14 REC
0.4Vp-p (0.5msec.div.)

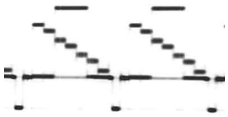
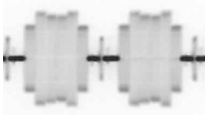
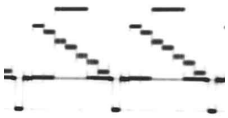
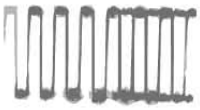
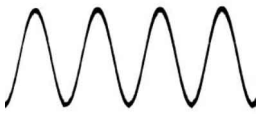
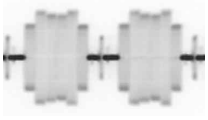


IC4501-21 REC
1.4Vp-p (20usec.div.)



IC4501-22,24 PLAY
1.4Vp-p (20usec.div.)

IC4501-53,57 REC/PLAY
1.8Vp-p (0.5msec.div.)

P30003-1 PLAY (DVD) 3.0Vp-p (0.1msec.div.)	P30003-2 PLAY (DVD) 3.0Vp-p (2msec.div.)	P30003-3 PLAY (DVD) 3.0Vp-p (2msec.div.)	 P30003-13 PLAY (DVD) 1.0Vp-p (20µsec.div.)	 P30003-14 PLAY (DVD) 0.6Vp-p (20µsec.div.)
P30003-16 PLAY (DVD) 0.4Vp-p (20µsec.div.)	P30003-17 PLAY (DVD) 0.5Vp-p (20µsec.div.)	 P30003-18 PLAY (DVD) 1.0Vp-p (20µsec.div.)	 P30004-1 PLAY (DVD) 2.7Vp-p (0.5msec.div.)	 P30004-13,15 PLAY (DVD) 1.0Vp-p (0.5msec.div.)
IC33501-19 PLAY (DVD) 1.2Vp-p (20µsec.div.)	IC33501-22 PLAY (DVD) 1.2Vp-p (20µsec.div.)	IC33501-25 PLAY (DVD) 2.0Vp-p (20µsec.div.)	IC33501-28 PLAY (DVD) 2.0Vp-p (20µsec.div.)	IC33501-31 PLAY (DVD) 2.0Vp-p (20µsec.div.)
 IC33501-33 PLAY (DVD) 1.2Vp-p (20µsec.div.)				

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE

AV2 IN
JK4951
(FRONT JACK)
IN (R)
IN (L)
FRONT AUDIO (R)
FRONT AUDIO (L)
P4951 1 P3301 5
P4951 3 P3301 3

IC4501

FROM DVD INTERFACE
MIX OUT (R)
MIX OUT (L)

AV1 IN
VHS/DVD OUT
JK33001
(REAR JACK)
IN (R)
IN (L)
AUDIO IN (R)
AUDIO IN (L)
TL4406
TL4405

OUT (R)
OUT (L)
AUDIO OUT (R)
AUDIO OUT (L)
TL4404
TL4504
TL4403
TL4503
QR4406
QR4405
MUTE

TO TUNER
RFC AUDIO OUT
QR4651
MUTE

(GL)
FROM DECODER
TUNER AUDIO (R)
TUNER AUDIO (L)

(GC/GCS)
IC3001
FROM TUNER/ DECODER
TUNER AUDIO (N)
MUTE
REC EQ
VCA
fh TRAP
R
P
TO/FROM AC HEAD
A.HEAD (W)
A.HEAD (R)
MUTE CTL
MUTE CTL

FROM SYSTEM CONTROL
FM MUTE (H)

INPUT SELECT SWITCH RCH
INPUT SELECT SWITCH LCH
OUTPUT SELECT SWITCH RCH
OUTPUT SELECT SWITCH LCH
PNR RCH
PNR LCH
NORMAL SELECT SWITCH

AGC & SWITCH
FM MODULATOR/ DEMODULATOR
LPF
BPF
BPF
LPF
FM MODULATOR/ DEMODULATOR
AGC & SWITCH
AGC

IIC BUS INTERFACE
TL4501
TL4502
IIC CLOCK
IIC DATA
TO/FROM SYSTEM CONTROL

VCO F0
FSC
FROM LUMINANCE & CHROMINANCE

AUDIO H.SW
FROM SYSTEM CONTROL

TW4502
D.REC (H)
FROM SYSTEM CONTROL

PREAMP & SWITCH

P5001 8
P5001 9
P5001 10
L
R
Hi-Fi AUDIO HEAD

NV-VP31GL/GC/GCS
AUDIO BLOCK DIAGRAM

MOTOR DRIVE SIGNAL TRACKING ERROR SIGNAL FOCUS ERROR SIGNAL

OPTICAL PICK UP UNIT

PHOTO DETECTOR

B1 B2 A1 A2 A4 A3 B4 B3

HEAD AMP

LASER DIODE (DVD)

LASER DIODE (CD)

ACTUATOR

FOCUS COIL

TRACKING COIL

FP5101 14	TA(DVD)	FP5102 38	FP5201 13	126	VIN1
FP5101 13	TD(DVD)	FP5102 37	FP5201 14	127	VIN2
FP5101 12	TC(DVD)	FP5102 36	FP5201 15	128	VIN3
FP5101 11	TB(DVD)	FP5102 35	FP5201 16	129	VIN4
FP5101 9	FE1(CD)	FP5102 33	FP5201 18	122	VIN5
FP5101 4	FE2(CD)	FP5102 29	FP5201 22	123	VIN6
FP5101 19	F1(DVD)	FP5102 44	FP5201 7	124	VIN7
FP5101 18	F2(DVD)	FP5102 43	FP5201 8	125	VIN8
FP5101 6	T1(CD)	FP5102 30	FP5201 21	130	VIN9
FP5101 3	T2(CD)	FP5102 28	FP5201 23	131	VIN10
FP5101 20	RFN	FP5102 45	FP5201 6	120	RFINN
FP5101 21	RFP	FP5102 46	FP5201 5	121	RFINP
FP5101 24	LD+(DVD)	Q5111 LD DRIVE	FP5102 48 / FP5201 3	Q5221 LD DRIVE	133 LPCO1
FP5101 16	PIN(DVD)	FP5102 41	FP5201 10	132	LPC1
FP5101 7	LD+(CD)	Q5115 LD DRIVE	FP5102 31 / FP5201 20	Q5225 LD DRIVE	135 LPCO2
FP5101 2	PIN(CD)	FP5102 27	FP5201 24	134	LPC2
FP5101 30	T+				
FP5101 27	T-				
FP5101 29	F+				
FP5101 28	F-				

IC3001 (DV1)

IC2501 (MOTOR DRIVE)

DRV8 78	MUTE1,2 FP5201 35 / FP5102 16	9	CH1,2 MUTE
DRV4 74	MUTE3 FP5201 34 / FP5102 17	27	CH3 MUTE
DRV0 70	TRVIN FP5201 29 / FP5102 22	26	TRIN
DAC0 152	FOIN FP5201 32 / FP5102 19	3	VIN2
DAC1 150	TRIN FP5201 31 / FP5102 20	2	VIN1
DRV1 71	SPIN FP5201 30 / FP5102 21	23	VIN3
AD0 148	DMV FP5201 33 / FP5102 18	6	OPOUT
		14	VO1+
		13	VO1-
		12	VO2+
		11	VO2-

BIAS1

BIAS2

LEVEL SHIFT

LEVEL SHIFT

LEVEL SHIFT

LDIN 24	TRAY DRV FP5102 8 / FP5201 43 / P4201 / P30004 6 — FROM DVD INTERFACE (VCR MAIN)
VO4+ 15	M2502 TRAVERS MOTOR
VO4- 16	
VO3+ 17	M2501 SPINDLE MOTOR
VO3- 18	
OPIN- 5	
OPIN+ 4	
CH4 MUTE 20	TRAY MUTE FP5102 5 / FP5201 46 / P4201 / P30004 5 — FROM DVD INTERFACE (VCR MAIN)
LD CNT 28	TRAY/TRV FP5102 39 / FP5201 12 / P4201 / P30004 3 — FROM DVD INTERFACE (VCR MAIN)

NV-VP31GL/GC/GCS
DVD (SERVO) BLOCK DIAGRAM

VIDEO MAIN SIGNAL PATH

AUDIO MAIN SIGNAL PATH

OPTICAL PIC-UP UNIT

VIDEO/RF SIGNAL

IC3001
(DVI)

126 VIN1
127 VIN2
128 VIN3
129 VIN4
122 VIN5
123 VIN6
124 VIN7
125 VIN8
130 VIN9
131 VIN10
120 RFINN
121 RFINP

IC4201
(AUDIO D/A CONVERTER)

SRCK 175
LRCK 174
ADOUT3 176
BCK 1
LRCK 3
DATA 2
AUDIO SERIAL PORT
OVERSAMPLING DIGITAL FILTER WITH FUNCTION CONTROLLER
ENHANCED MULTI-LEVEL DELTA-SIGMA MODULATOR
DAC
DAC
OUTPUT AMP & LOW-PASS FILTER
OUTPUT AMP & LOW-PASS FILTER
7 MIXL
8 MIXR

STBDAC 65
SBT1 59
SBO1 60
STBDAC 15
SBT1 14
SBO1 13
SERIAL CONTROL PORT
ZERO DETECT

EXTCK 172
SCK 16
SYSTEM CLOCK HANAGER
SYSTEM CLOCK

IC4301

6 AMP 7 → AUDIO MIX(L) → P4201 P30004 13
2 AMP 1 → AUDIO MIX(R) → P4201 P30004 15
-7.5V
4 VEE
DIGITAL AUDIO → P4201 P30004 1

TO DVD INTERFACE (VCR MAIN)

QR4301
QR4302
MUTING CONTROL

IC6311
(LATCH)

19 Q0
12 Q7
ADDRESS
D0 2
D7 9
DATA
11 LE

IC6312
(LATCH)

19 Q0
12 Q7
ADDRESS
D0 2
D7 9
DATA
11 LE

IC6561
(CLOCK GENERATOR)

10 768fs
XTI 7
X6501
OSC1 92
15 CLK33
BECLK 170
3 CLK54
XTO 8

IC6351
(EEP ROM)

SCL 53
6 SCL
SDA 54
5 SDA

IC6301
(16M FLASH ROM)

25 A0
18 A7
8 A8
1 A15
ADDRESS
DQ0 29
DQ1 31
DQ2 33
DQ3 35
DQ4 38
DQ5 40
DQ6 42
DQ7 44
DQ8 30
DQ9 32
DQ10 34
DQ11 36
DQ12 39
DQ13 41
DQ14 43
DQ15 45
DATA

19 EXADT0
34 EXADT1
32 EXADT2
45 EXADT3
20 EXADT4
35 EXADT5
31 EXADT6
44 EXADT7
21 EXADT8
36 EXADT9
28 EXADT10
41 EXADT11
22 EXADT12
37 EXADT13
27 EXADT14
40 EXADT15
DATA

26 XCE
ADDRESS
A16 48
A17 17
A19 9
A20 10
25 A16
38 A17
39 A19
17 A20
ADDRESS

XRST 12
XWE 11
XOE 28

33 NEXCE
46 NEXOE
18 NEXWE
68 NRST

IC6201
(RESET)

OUT 4

TO/FROM DVD INTERFACE (VCR MAIN)

P30003 P3201 1 DSP CLOCK → 62 DSP CLK
P30003 P3201 2 STATUS → 63 STATUS
P30003 P3201 3 CMD → 64 CMD

AMUT 49
IECOUNT 181
DAC1OUT 158
DAC2OUT 160
DAC3OUT 161
DAC4OUT 163
DAC5OUT 164

PY/Y → P3201 P30003 18
PB/CB → P3201 P30003 16
PR/CR → P3201 P30003 17
Y OUT → P3201 P30003 13
C OUT → P3201 P30003 14

TO DVD INTERFACE (VCR MAIN)

IC3051
(64M SDRAM)

MDQ0 12
MDQ1 9
MDQ2 6
MDQ3 3
MDQ4 256
MDQ5 253
MDQ6 251
MDQ7 247
MDQ8 249
MDQ9 252
MDQ10 255
MDQ11 2
MDQ12 5
MDQ13 8
MDQ14 10
MDQ15 13
MDQ16 209
MDQ17 203
MDQ18 200
MDQ19 197
MDQ20 193
MDQ21 191
MDQ22 187
MDQ23 185
MDQ24 184
MDQ25 188
MDQ26 190
MDQ27 192
MDQ28 196
MDQ29 199
MDQ30 201
MDQ31 204
MEMORY DATA

2 DQ0
4 DQ1
5 DQ2
7 DQ3
8 DQ4
10 DQ5
11 DQ6
13 DQ7
74 DQ8
76 DQ9
77 DQ10
79 DQ11
80 DQ12
82 DQ13
83 DQ14
85 DQ15
31 DQ16
33 DQ17
34 DQ18
36 DQ19
37 DQ20
39 DQ21
40 DQ22
42 DQ23
45 DQ24
47 DQ25
48 DQ26
50 DQ27
51 DQ28
53 DQ29
54 DQ30
56 DQ31
MEMORY DATA

DQM0 243
DQM1 246
DQM2 203
DQM3 207
16 DQM0
71 DQM1
28 DQM2
59 DQM3

MA0 220
MA1 217
MA2 214
MA3 210
MA4 212
MA5 216
MA6 219
MA7 227
MA8 229
MA9 235
MA10 228
MA11 231
MEMORY ADDRESS

25 A0
26 A1
27 A2
30 A3
61 A4
62 A5
63 A6
64 A7
65 A8
66 A9
24 A10
21 A11
MEMORY ADDRESS

NCSM 238
NRAS 239
NCAS 242
XWE 232
MCK 225
20 CS
19 RAS
18 CAS
17 WE
68 CLK

NV-VP31GL/GC/GCS
DVD (VIDEO/AUDIO)
BLOCK DIAGRAM

VCR VIDEO MAIN SIGNAL PATH IN REC MODE

VCR AUDIO MAIN SIGNAL PATH IN REC MODE

DVD VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

DVD AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

IC33501
(VIDEO DRIVER)

FROM
DVD MODULE
(VIDEO/AUDIO)

P3201 P30003 14 — C OUT — 2 — 4dB — 6.75MHz LPF — 2dB — DRIVE — 33

2dB — DRIVE — 30

P3201 P30003 13 — Y OUT — 6 — 4dB — 6.75MHz LPF — 2dB — DRIVE — 28

P3201 P30003 18 — PY/Y — 12 — 4dB — 13.5MHz LPF — 2dB — DRIVE — 25

P3201 P30003 16 — PB/CB — 14 — 4dB — 6.75MHz LPF — 2dB — DRIVE — 22

P3201 P30003 17 — PR/CR — 16 — 4dB — 6.75MHz LPF — 2dB — DRIVE — 18

DVD VIDEO OUT

DVD VIDEO IN

TO LUMINANCE & CHROMINANCE

DVD OUT
JK34301

TL33374 — 2 — VIDEO OUT

TL33571 — 9 — Y OUT

TL33572 — 6 — PB OUT

TL33573 — 3 — PR OUT

TL34371 — 5 — AUDIO (L) OUT

TL34372 — 8 — AUDIO (R) OUT

IC36001
(SUB CPU)

TO
DVD MODULE
(SERVO)

P4201 P30004 3 — TRAY/TRV — 46 TRAY/TRV SW

P4201 P30004 5 — TRAY MUTE — 31 TRAY MUTE

P4201 P30004 6 — TRAY DRV — 44 F IN

45 R IN

TO/FROM
DVD MODULE
(VIDEO/AUDIO)

P3201 P30003 1 — DSP CLOCK — 6 DSPCLK

P3201 P30003 2 — STATUS — 5 STATUS

P3201 P30003 3 — CMD — 4 CMD

FROM
TRAY SW

P1103 P1102 P31001 1 13 — TRAY SW — 37 TRAY OPEN

DVD S VIDEO OUT
JK34302

TL33376 — C — 4

TL33375 — Y — 3

IC34372

3 — DIGITAL AUDIO OUT (OPTICAL)

P4201 P30004 1 — DIGITAL AUDIO

P4201 P30004 13 — AUDIO MIX (L) — QR34410 MUTE — MIX OUT (L)

P4201 P30004 15 — AUDIO MIX (R) — QR34419 MUTE — MIX OUT (R)

TO
AUDIO

NV-VP31GL/GC/GCS
DVD INTERFASE BLOCK DIAGRAM